ABSOPURE SERVICE INFORMATION GIVEN

Detroit—Instructions on installing domestic refrigerators of the Absopure Refrigeration Corp., together with information for the customer on the care of the machine, and service instructions for the benefit of any service man who may be called in to make adjustments, are embodied in an Absopure bulletin which is enclosed in an envelope attached to each household refrigerator sold by that company.

It is intended for particular use where service is done by men who have not specialized in Absopure maintenance work enough to be thoroughly familiar with it, according to T. S. Pendergast, factory superintendent.

The instructions are reproduced below:

Installation

1. Remove the crate from the refrigerator carefully to avoid marring the exterior finish. First take out the screws in the front and back of the crate and remove the panels; then pull the nails in the sides of the crate and remove the rest of the panels. After unscrewing the frame from the top of the cabinet, put the metal cabinet top in place.

2. The cabinet legs will be found in a carton in the machine compartment. The necessary screws for attaching them are in an envelope in the carton. Lay the refrigerator on its back and attach the legs—being particular that the outside of the leg lines up with the outside of the cabinet.

3. After placing the refrigerator in the designated place, remove the shipping block and shipping bolts that hold the condensing unit in place. There are four bolts, and they run through the four rubber pads. To obtain freedom from vibration, the bolts must be taken out. The bolts should be saved, as it will be necessary to put them in again if the refrigerator is to be moved to another location.

4. The refrigerator must be placed so that there is at least 1½ in. between the back of it and the wall. This is necessary to provide an outlet for the warm air from the machine compartment. A refrigerator with the machine in the base must never be built in, as the operation will not be satisfactory. The refrigerator must be placed so that no part of the cabinet touches the walls or shelving. The refrigerator must rest squarely on all four corners to minimize vibration and "telegraphing" of noise.

5. Before starting motor:

(a) Oil the motor by filling both oil reservoirs with a good grade of light motor oil.

(b) Open top line valve—marked with RED tag—as instructed on tag.

Open bottom line valve—marked with BLUE tag—as instructed on tag. The cap must be screwed down tightly on this valve as there is no back seat.

Open suction line valve—marked with GREEN tag—as instructed on tag.

The above valves have double seats, and should be screwed out hard as far as possible, so that the back seats will hold.

Note: All line valves have right-hand threads; therefore, they should be turned in direction that hands of clock move to *close* valve, and in opposite direction to *open* valve.

(c) Turn the compressor over by hand two or three times before starting the motor.

(d) Check the current specifications on the motor with the current specifications in the building to be sure that the right motor is being used.

(e) Start the motor and let the machine run.

(f) Install a compound gauge in the outlet port of a line valve on the side of the compressor. Open the suction line valve slightly by turning the valve stem "in" (in the opposite direction to the arrow), and see that the suction line pressure is approximately 5½ lbs.

(g) As soon as the machine is prepared for operation as above described, stop it, and check all the joints for leaks. Putting a little heavy oil from an oil can around each joint will detect even the slightest leak. A small mirror will help you examine each joint thoroughly.

Instructions for Purchaser

The installer should instruct the purchaser on the following points, and see that they are understood:

1. The motor must be oiled every month with a good grade of light motor oil. Show the purchaser the two oil cups and how to do it.

2. Instruct the purchaser that the refrigerating machine must never be adjusted or tampered with except by an experienced service man. Adjustments made by anyone not entirely familiar with the principles of the system may put the system out of order and make repairs necessary.

3. See that the fuse is the proper size (6 amperes) and instruct the purchaser that larger sizes must not be used. The right size of fuse affords reasonable protection against the overloaded burned out motor.

4. Instruct the purchaser not to put food in the refrigerator until the machine has been in operation at least three hours. After the machine has reduced the temperature to the proper point, the refrigerator should be aired by opening the door for a few minutes, after which it can be used in the usual way.

5. Some frost and ice will accumulate around the ice tray sleeves and bottom coil of the freezing unit. The machine should be shut off long enough for this to melt every two or three weeks. Show the purchaser how to stop the machine with the defrosting switch on the side of the thermostat. Also show the customer how to remove both the freezing compartment shield and the drip pan. The drip pan should be emptied and washed whenever the freezing unit is defrosted.

6. Show the customer how the manual temperature regulator works. There are four freezing speeds. They should be used only for fast freezing. After the freezing is accomplished, set the control at normal, with the knob turned back as far as possible.

Servicing the Compressor

The compressor takes the refrigerant in vapor form from the suction line at approximately 5½ lbs. pressure, and compresses it in the condenser to a point where it will condense into liquid. There are line valves bolted to the compressor at both the inlet and outlet, making it possible to remove easily the compressor for repairs by shutting off both valves, unbolting them, and taking out the base bolts.

To test the operation of the compressor to be sure that it is functioning properly, it is only necessary to shut off the line valves, remove the outlet port plugs from both valves, and run the compressor with the air going through it. If it is discharging air from the port in the top line valve, install a pressure gauge in this port, start the compressor, and see that it will pump to about 225 lbs. If it will do this, you may be sure that the piston rings and suction valve are working properly.

Testing the Compressor

With the gauge screwed into the outlet port tightly, let the compressor pump 225 lbs. pressure, then stop the motor. If the pressure holds, or if the needle drops back very slowly, the discharge valve holds satisfactorily. If either valve fails to hold, remove the valve, examine and clean it, or renew the disc if necessary.

Seal leaks are rare, but can usually be repaired by removing the compressor, dissembling it, removing the seal by unscrewing the seal nut, which is just back of the flywheel, and taking the shaft out by unscrewing it from the cam and connecting rod assembly. Clean and polish the seal face of the shaft with crocus cloth, and if the face of the seal is not smooth, lap it lightly with a rotating motion with oil on a true razor hone.

To determine the amount of oil in the crankcase of the compressor, shut off the suction line valve on the side of the cylinder and remove the pipe plug from the top of the crankcase directly under the line valve. A short piece of insulated wire makes a good measuring rod. There should be between 1½ and 1¾ in. of oil in the crankcase. Use only *Absopure Refrigerating Oil.*

The compressor can run in one direction only. When you are facing the flywheel, the wheel must turn in the same direction as the hands of a clock. If it is reversed, the compressor is very likely to be damaged.

Motor, Expansion Valve

Complete instructions for caring for the motor are given in the envelope attached to the motor. The instructions should be used when any motor trouble develops. Motors are guaranteed by their manufacturers rather than by us. If you cannot repair the motor, take the matter up with the motor manufacturer or their representatives in your locality. The motor should be oiled at both oil cups once a month, and ordinarily this is all the attention it requires.

The expansion valve is the automatic device that regulates the flow of refrigerant from the liquid line to the freezing unit. The suction line pressure controls the passage of refrigerant. When the refrigerating machine leaves the factory, the expansion valve is set at a pressure of 5½ lbs. It is seldom that any adjustment will be required.

There is a plug cap over the adjusting screw in the center of the front plate of the valve. The plug cap and gasket are necessary to exclude moisture from the bellows. You can check the suction line pressure by attaching a compound gauge in the outlet port of the line valve on the side of the compressor, and slightly opening the valve. If the pressure is below 5½ lbs, raise it by turning in on the adjusting screw a quarter turn at a time until the correct pressure registers on the gauge. If it is too high, turn out on the screw the same way.

If the suction line pressure is erratic and fails to hold properly, first test the compressor as outlined above. If it pumps and holds pressure properly, the fault is probably in the expansion valve. You can remove the expansion valve by closing the line valve on the bottom of the condensor and pumping the charge into the condensor, then disconnect the liquid line and unscrew the valve. By removing the two hexagon caps at each end of the expansion valve, you can clean and inspect the inside of the valve. Before reassembling it, wash it thoroughly with carbon tetrachloride or clean undiluted alcohol. Be sure that the strainer in the valve is clean and unobstructed.

Removal of Moisture in System

If there is moisture in the system that is interfering with the operation of the expansion valve, it can be removed by installing the drier that is furnished in the Service Tool Kit, in the liquid line and operating the machine intermittently for a few hours. Do not run the machine with a drier on it long enough to frost the freezing unit, as moisture will freeze to the inside of the coil and stay there. When using the drier, turn the adjusting screw of the expansion valve in all the way, and reset the pressure after removing the drier.

The refrigerant used in all Absopure machines is Methyl Chloride, and the correct charge for the household machine is one pound. A shortage of refrigeration is usually indicated by a lack of refrigeration, the machine running constantly without the suction line frosting, and a steady hissing noise at the expansion valve.

When refrigerant is required, the first thing to do is locate the leak in the system and repair it. You will usually find some indication of oil around the place that is leaking. If you cannot find the leak otherwise, attach a drum of Sulphur Dioxide to the system, run the machine for a minute or two to be sure that the system contains Sulphur, then remove the drum and attach a drum of Methyl Chloride to raise the pressure, and pass an uncorked bottle of concentrated aqua ammonia around all the joints. Any place that the Sulphur is escaping and mixing with the ammonia fumes a white smoke will form, indicating the place that is leaking.

Use of Refrigerant Tanks

Service tanks should always be attached to the outlet port of the line valve on the side of the compressor with a long enough piece of copper tubing that it will be flexible and allow the tank to stand in an upright position. This applies whether the tank contains Sulphur for testing, or Methyl Chloride for charging.

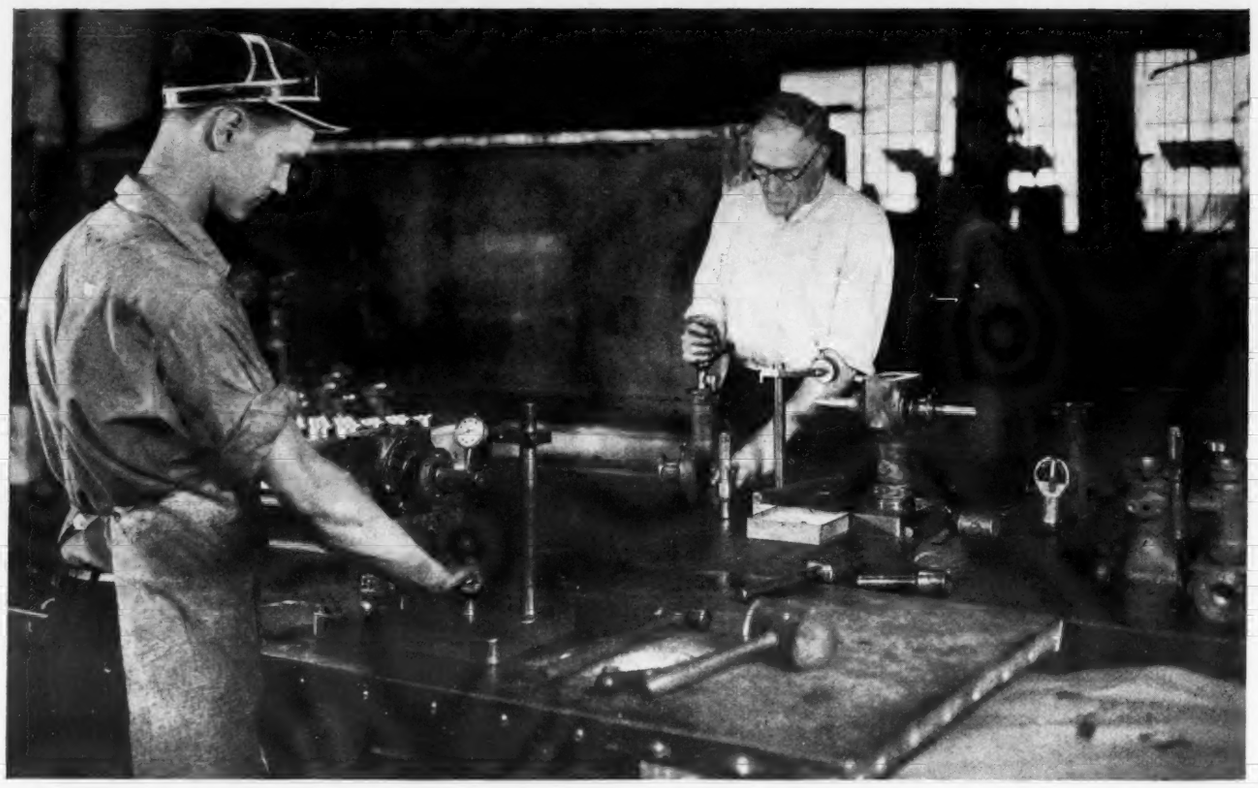
When a system is short of refrigerant, it is good practice to let out practically all the charge still remaining in the system and recharge it—weighing the one pound of refrigerant into the machine. The service tank can be set on a postal scale with the charging line attached, and the charge measured accurately. When discharging a machine before recharging, leave only enough gas in the system to create a pressure that will keep air from entering.

Do Not Draw a Vacuum

Never run a unit in a way that will draw a vacuum on the system. It is much better practice to remove air from a system by attaching a service tank as described above, shutting off the suction line valve so that the refrigerant will feed to the compressor only, then opening the suction line connection at the suction line valve and running the machine. The refrigerant will be forced through the entire system, and the air forced out through the loosened suction line connection. As soon as the air is out of the system, the connection can be tightened and the machine run until it contains the correct charge.

The thermostat is of the capillary line type with the bulb attached to the freezing unit and the switch mechanism mounted on the base of the machine compartment. Complete instructions for adjusting both the range and the differential are posted on the inside right cover of the thermostat case. Do not try to adjust the thermostat before checking the refrigerating system to be sure that it is working properly.

Working for Accuracy in Compressors at Kelvinator Factory



Compressor cylinder blocks are being checked for squareness of the cylinder bore and the diameter of the crank bearings, and cylinder bores are being inspected in this view in the Kelvinator factory.

The man at the left in the picture is indicating the crankshaft bore by placing in it a 14-in. arbor, with which he locates the cylinder block from the cylinder bore. Thus they work toward positive squareness between the two bores. This limit is held to .002 in. over the 14-in. arbor.

The man on the other side of the bench is checking the cylinder bore for size, and also the depth of the counterbore in the top of the cylinder and piston sleeve.

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other material recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Cabinet Gasket Tacker

A bulletin of the Markwell Mfg. Co., 200 Hudson St., New York City, describes their tacking machine which is designed for driving staples and locking them in place, to hold gasket seals on refrigerator cabinet doors. It can also be used for tacking shipping tags, part and direction charts, and on other miscellaneous jobs where hammer and tack would be used.

General Electric Thrustors

Bulletin CR9504 of the General Electric Co. describes an electric thrustor which may be used to supply pressure or actuate lever mechanisms. It consists of a motor whose rotary motion is converted hydraulically into a straight-line thrust, the return stroke being accomplished by gravity or a return spring.

Packing Containers

The Hinde & Dauch Paper Co.'s booklet, "How to Pack It," illustrates their corrugated boards and packing cartons. Recommended means of packaging goods are explained therein, and suggestions made on how to meet transportation requirements.

"Circle T" Fuses

A 12-page pamphlet of the Trumbull Electric Mfg. Co. illustrates its latest line of unit panel boards, cabinets, fuse caps, fuse sections, and fuse boxes. Specifications of panels and cabinets are furnished, and information provided for determining fuse box sizes.

Electric Hoists

A bulletin of the Wright Mfg. Co. describes its new high-speed electric hoists. They are designed for different types of suspensions, and are furnished with either push button or pendant rope control. Motors and controls are built in dust-proof and weather-proof enclosures.

Slip Ring Motors

The Wagner Electric Corp. of St. Louis provides an eight-page bulletin, numbered 169, which discusses the mechanical and electrical characteristics of slip ring motors, their starting action, speed torque curves, and control equipment needed for their operation.

R & H Chemical Co.

The applications of "Artic" methyl chloride as a refrigerant are recounted in booklet No. 501 of the Roessler & Hasslacher Chemical Co. It also offers current prices of about 150 other chemical compounds furnished by this company.

Century Fans

Alternating and direct current fans of the stationary, oscillating, ceiling and ventilating types are subjects of Bulletin 41 of the Century Electric Co., St. Louis. Eighteen models, all told, ranging in size from the 8-in. stationary fan to a 60-in. ceiling ventilator, are discussed.

BELL & GOSSETT HEATING BOILER WATER WITH OIL

Chicago—Bell & Gossett Co. of this city are making a double duty indirect water heater for use in connection with oil-fired hot water heating boilers. The oil burner, when the B. & G. heater is used, is operated with an immersion type aquastat.

The boiler aquastat set at 150 degrees to 170 degrees operates the oil burner just enough to maintain this temperature range. This uniformly heated boiler water continually flowing over the copper coils in the heater furnishes an abundant supply of hot water at all times.

The B. & G. valve unit installed in the flow main of the hot water heating boiler contains an automatically operated, non-corrosive bronze valve. This valve operates in conjunction with the room thermostat, thus controlling the circulation of water to the radiators.

THERMAL UNITS CO. NAMES BOSTON DISTRIBUTOR

Chicago—The Wolverine Heating, Ventilating & Equipment Co. has recently been appointed Boston distributor for the Thermal Units Co., of this city. They will handle its full line of Thermal equipment for heating, cooling and air conditioning.

C. W. Hoyt is president of the Wolverine Co., and the vice-president is D. C. Brown.

15,000 Copies

In Three Parts—Part 1

Merchandising Section

UNIVERSITY OF CALIFORNIA LIBRARY BRANCH OF THE COLLEGE OF AGRICULTURE

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
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FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEAR

NORGE FACTORY HITS TOP SPEED TO FILL ORDERS

Whole Organization Geared Up For Nation-Wide Distribution

Detroit—Two record orders of 2,000 and 1,000 household refrigerators received recently from Pennsylvania distributors by the Norge Corp. have caused H. L. Spencer, factory superintendent, to step up the production schedule of the Norge factory here to its full capacity, 1,800 units per week.

The Alaska Refrigerator Co. at Muskegon, Mich., is also working at full capacity to supply cabinets for these new models.

The Trilling-Montague Co., Norge distributor in Philadelphia, is responsible for the first 40-carload order ever received by the Norge factory, and is pressing its request for immediate delivery of the 2,000 machines.

From Ludwig Hommel & Co. of Pittsburgh came the order for 1,000 refrigerators.

Both of these large orders followed directly upon Norge distributor-dealer meetings held in these two cities. Other distributor-dealer meetings, held in 30 cities during March and April, have also resulted in substantial orders. Three upward revisions in production schedules have occurred during late February and March.

For the first time since its entry into the field six years ago, the Norge Corp. has gone national in its sales operations. Since January 1, 15 new distributors,

(Concluded on Page 2, Column 4)

NEMA GROUP TALKS ABOUT GUARANTEE

Cleveland—Discussion of the three-year warranty recently adopted by four large manufacturers of electric refrigerators enlivened the session of the Refrigeration Division of the National Electrical Manufacturers' Association, held here March 25.

While ideas expressed at the meeting regarding the merits of the long-term guarantee were considerably at variance, the consensus of opinion was that the guarantee is here to stay, and must be reckoned with by all companies in the field.

Other matters considered at the meeting mainly concerned technical standards, and popularization of the Standard Safety Code sponsored by the American Society of Refrigerating Engineers and approved by the American Standards Association last October.

Louis Ruthenberg, president of Copeland Sales Co. and chairman of the Refrigeration Division of the N. E. M. A., was in the chair.

Harry Williams of Frigidaire, chairman of the Technical Committee, reported on methods of measuring cabinets, and presented definitions which, when approved through the regular N. E. M. A. procedure, will become industry standards.

The Technical Committee reported progress on standardization of ratings for commercial machines, and methods of testing household machines.

M. C. Terry, of Westinghouse, chairman of the Committee on Codes and Ordinances, presented a report on the progress of the American Standards Association in promulgating the American

(Concluded on Page 4, Column 5)

FRIGIDAIRE DEALERS HOLD SPRING SHOWINGS

Dayton, Ohio—Frigidaire dealers and distributors throughout the country are now making a "spring showing" of the new White Line Frigidaires.

Flowers, music, entertainment, special demonstrations and local advertising campaigns are all a part of the program to get prospects into the display rooms.

HOLBROOK GETS ORDER

San Francisco—Holbrook, Merrill & Stetson, Inc., will install the electric refrigeration in the $175,000 six-story, 26 apartment building to be erected by E. Jose at Jackson and Gough Sts. here.

Directs Drive

HOWARD BLOOD
Norge President Speeds Production

KELVINATOR ADOPTS 3-YEAR GUARANTEE

Detroit—All 1931 Kelvinator porcelain household models are now sold under a three-year guarantee, according to H. I. Burritt, vice-president in charge of sales of the Kelvinator Corp. The guarantee covers both the machine and the cabinet.

No change in the list prices of these models has been made, Burritt states. Dealers and distributors will take care of service calls on the refrigerators sold under this guarantee, while the factory will furnish all replacement parts.

Lacquer cabinet models carry a one-year guarantee on the cabinet and a three-year guarantee on the machine. All commercial refrigerating machines will be guaranteed for one year, Burritt announces.

CHAMPION PLANS TO START PRODUCTION IN BROOKLYN

New York City—With the moving of machinery, dies and equipment from Buffalo to Brooklyn, comes the announcement by Samuel Mann, of the Champion Refrigerator Co., Inc., that production will be resumed shortly.

The Champion Company, according to Mann, plans to manufacture porcelain refrigerator cabinets suitable for electric machines.

UTILITY SELLING MEASURES KILLED IN THREE STATES

Pennsylvania, Texas Solons Consider Merchandising Prohibitions

Sacramento, Calif.—By a vote of six to three the senate committee to which the bill had been referred refused to report back the measure to prohibit merchandising by public utilities.

The bill thus becomes a dead issue for the present legislature.

NEBRASKA

Lincoln, Neb.—A bill refusing public service corporations the right to sell electric and gas accessories has just been defeated by the Nebraska legislature.

The vote showed a sharp cleavage between rural members, who were solidly behind the measure, and representatives from Nebraska cities, who were opposed to it.

Retail trade associations of the state are now uniting to support a "fair trade practices" bill, which has been introduced.

This measure would provide a board, similar in powers and duties to the state railway commission, which would review allegedly unfair mercantile practices and attempt to enforce truth in advertising.

INDIANA

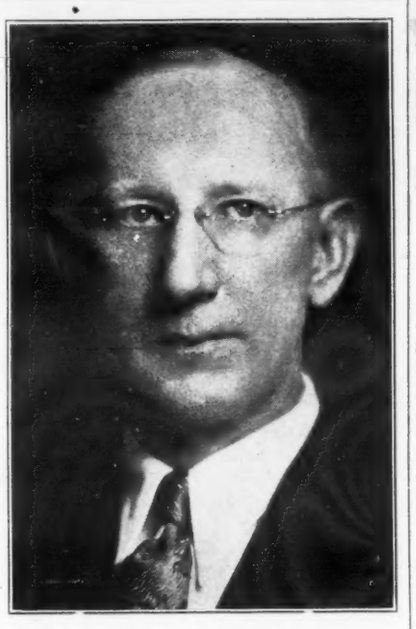
Indianapolis, Ind.—A bill prohibiting public utilities from engaging in the sale of load-building merchandise, which was recently introduced in and passed by the Indiana state senate, has failed to pass the house of representatives.

It was reported back by the house committee to which it was referred, with the recommendation that it be indefinitely postponed.

According to the amended provisions of this bill, public utilities would have been enjoined from manufacturing or offering for sale "any apparatus or device designed to consume or create the product of any public utility, if the valuation of property used in the manufacture of such apparatus or device is included in the valuation of such public utility for rate purposes, or if the over-

(Concluded on Page 4, Column 3)

Enlarges Plant



H. J. HUNT
Trupar President Extends Facilities

MAJESTIC WARRANTY BRINGS NEW PRICES

Chicago—Coincident with the resumption of production of Majestic electric refrigerators comes the announcement of a three-year guarantee and new higher prices on all three models.

Model 140, the 4½-cu. ft. job, now retails at $169.50 f.o.b. Chicago; Model 150, with 5 cu. ft. capacity, sells for $235 f.o.b. Chicago, and Model 170, 7 cu.ft., will be marketed at $260 f.o.b. Chicago.

Minor adjustments will be handled by dealers under the new Majestic three-year warranty plan, while the factory will take care of all service on the hermetically sealed unit.

The signal light on the front of the Majestic box has been eliminated, and

(Concluded on Page 4, Column 5)

COPELAND HEAD REPORTS INCREASED SHIPMENTS

Mt. Clemens, Mich.—"Copeland unit shipments for March, 1931, are 27.62 per cent above unit shipments for the corresponding month of 1930," states Louis Ruthenburg, president of Copeland Products, Inc., in a report just issued.

"Unit shipments for the fiscal period beginning November 1, 1930, and ending March 31, 1931, show an increase of 52.72 per cent."

TRUPAR OFFICIALS PLAN EXPANSION POLICY FOR 1931

Plant Works 24 Hours a Day; New Equipment Added; Join N. E. M. A.

Dayton, Ohio—By stepping up production to a 24-hours-a-day schedule, the addition of a whole new wing to its factory, the installation of new machinery, and the securing of membership in the refrigeration division of the N. E. M. A., officials of the Trupar Manufacturing Co. are carrying out their decision to merchandise Mayflower electric refrigerators on a much more extensive scale than ever before.

In the new wing which has just been added to the Trupar factory is located a testing department. Leaving the assembly line, Mayflower refrigerators will be shunted into this department, where each complete unit will receive individual tests. The new wing adjoins railroad tracks, where carloadings may be made.

New machinery and equipment are still being added to the Trupar plant, according to Harry J. Hunt, president.

Along with Hunt, L. G. Lindsay, vice-president in charge of sales, and William M. Myers, treasurer, have been accredited to membership in the refrigeration division of the N. E. M. A.

The same distributing set-up will be maintained by the Trupar organization, but dealerships are now being placed on an intensive, rather than an extensive merchandising basis. New franchises

(Concluded on Page 4, Column 5)

SEARS ROEBUCK UNIT NOW SOLD IN STORES

Chicago—Four models of electric refrigerators are being sold by Sears, Roebuck & Co. of this city in the regular mail-order and retail chain store merchandising plan on which that company sells all its washing machines, vacuum cleaners, sewing machines, and other electrical appliances. The refrigerators carry the name of "Coldspot," and are manufactured by the Sunbeam Electric Mfg. Co., of Evansville, Ind.

The 4 cu. ft. model sells at $137.50; the 4½ cu. ft. size at $159.50; the 5½ cu. ft. unit for $179.50; and the 7½ cu. ft. refrigerator for $205. Prices are f.o.b. Chicago.

At the present time the Coldspot units are being sold in the majority of Sears' 350 retail stores, and will be placed in the rest of these soon and in the company's 10 mail-order branches, according to M. R. Garner, who is in charge of sales promotion of refrigerators. They have gone into homes in over 225 cities, he said, since sales were started in April, 1930.

The refrigerators are sold with the same guarantee that applies to all Sears, Roebuck merchandise—satisfaction or money back. Time payments may be arranged, extending over a period of 16 months.

Mats and advertising copy for optional use by the local retail managers, are

(Concluded on Page 2, Column 5)

RHODE ISLAND MEN FORM REFRIGERATION BUREAU

Providence, R. I.—The Electric Refrigeration Bureau of Rhode Island has established headquarters at the Electrical League of Rhode Island.

Harry Dawson is executive secretary; Roy F. Whitney, state director; H. A. Walker, chairman; J. J. Gallagher, finance chairman; and Alfred Buckley, advertising chairman.

An executive committee of six men includes C. E. Woodyard, Frank Prideaux, Irving Crooker, S. E. Shoquet, C. E. Dove, and Lester Crandall.

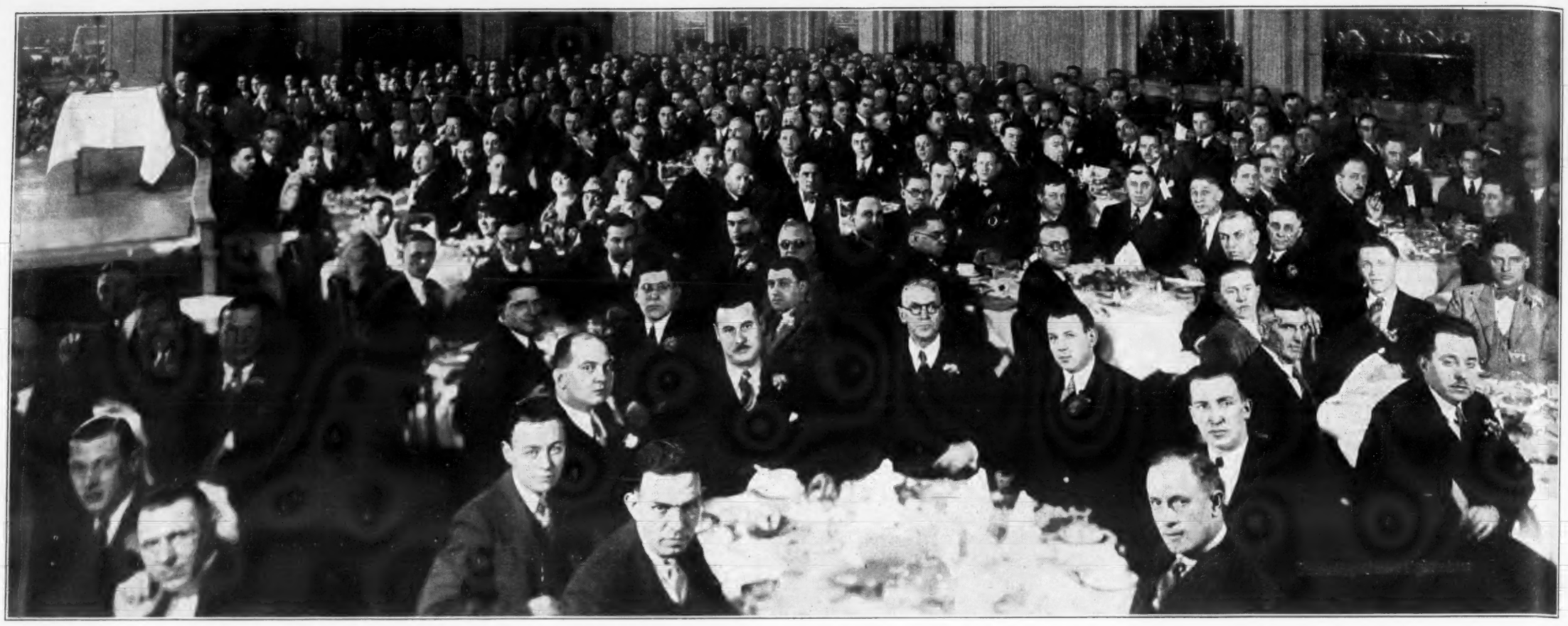
SOLBORG VICE PRESIDENT OF ARMCO INTERNATIONAL

Middletown, Ohio—R. A. Solborg has been appointed vice president of the Armco International Corp., export subsidiary of the American Rolling Mill Co.

Kenney Tests New Grunow Unit

M. W. Kenney, chief engineer for the recently formed Grunow Group, directs his laboratory staff tests on the new Grunow refrigerating machine. Kenney is fourth from the left in the above picture.

Norge Dealers Gather for Pittsburgh Distributor's Convention



HOMMEL & CO. EXPECT TO QUADRUPLE 1930 SALES

Pittsburgh—More than 400 dealers and salesmen gathered at the Schenley Hotel here recently for a Norge sales convention, sponsored by Ludwig Hommel & Co., Norge distributor for this city.

At this meeting Mr. Hommel announced that he expected to quadruple in 1931 the sales volume of Norge business done by his company in 1930. He also represents R. C. A. radio equipment in that district.

A total of 225 Norge dealers are now affiliated with the Hommel organization, which intends to have a dealer enrollment of 300 by July 1.

Other speakers were Howard E. Blood, president, and John H. Knapp, vice-president and director of sales, Norge Corp.; J. N. Ewing, general sales manager, Ludwig Hommel & Co.; E. E. McMullen, president, Norge Co. of Missouri; S. N. Zinner, vice-president, Walter Heller & Co., installment bankers; R. E. Caldwell, Cramer-Krasselt Co., advertising counsel; David M. Trilling, president, Trilling & Montague, Norge distributor in Philadelphia.

Confidential Service

EXECUTIVE AVAILABLE

Refrigeration executive, one of the best qualified men in the industry, with long experience in large and successful operations, is available for a high grade position.

Because of his present relations and standing in the field, it is out of the question for him to disclose his identity, except to responsible principals.

The undersigned will handle preliminary negotiations confidentially to both parties and will arrange appointment at the proper time.

F. M. Cockrell, Publisher, Electric Refrigeration News
550 Maccabees Bldg., Detroit, Mich.

COMMERCIAL SALES MANAGER WANTED

Large manufacturer of commercial refrigeration equipment wants a sales manager capable of directing national distribution.

In your first letter it will be advantageous to give the fullest possible information regarding your qualifications and your idea of salary.

In order to protect your identity the same as advertiser's identity is protected, you may send your application unsigned in a sealed envelope. Attach to the outside of the envelope a card or slip with your name and address thereon. Your card will be retained in this office and held in confidence. If advertiser is interested in your unsigned application, you will be notified to contact direct with him. Address your reply to

F. M. COCKRELL,
Publisher, Electric Refrigeration News
550 Maccabees Bldg., Detroit, Mich.

KELVINATOR ADVERTISING FEATURES RATING SCALE

Detroit—Inauguration of a standard rating scale for electric refrigeration in all national magazine and newspaper advertising of the Kelvinator Corp. is announced by officials of the company.

Sixteen questions making up the rating scale, and which cover the qualifications of an electric refrigerator, are appearing in all Kelvinator advertising.

In all of the advertisements the scale occupies a prominent position, with the copy designed to appeal and sell the reader on the basis of using the scale in the selection of a refrigerator.

The rating scale, according to Kelvinator officials, is the result of an extensive survey in which thousands of housewives were interviewed.

In a huge broadside complete details of the rating scale were announced to dealers and distributors in the field.

Comprising the scale are the questions listed below:

1. Is the refrigerator manufactured by a reliable company, with proper experience in the electric refrigeration field?
2. Is there plenty of food and shelf space?
3. Is the cabinet itself well designed, sturdily built and properly insulated?
4. Is there provision for the freezing of an adequate supply of ice cubes? (Quantity of ice rather than number of cubes, which may be of large or small size, should be taken into consideration.)
5. Will the refrigerator constantly maintain a proper temperature for the preservation of foods?
6. Can the freezing of ice cubes and desserts be speeded up when the need arises?
7. Can this extra freezing speed for ice cubes be had without affecting the temperature on the food shelves? (Too low a temperature on the shelves will, of course, injure food.)
8. Is there a place to keep ice cream, meat, fish, game, "quick frosted" foods or an extra supply of ice cubes indefinitely below freezing temperature?
9. Are these various temperatures (*a*. extra fast freezing; *b*. fast freezing; *c*. below freezing for storage; and *d*. normal food preservation temperature) automatically maintained without any attention from the owner?
10. Does refrigerating unit operate frequently or at infrequent intervals? (Other conditions being equal, the fewer the "stops" and "starts," the longer the unit will last and the less it will cost to run.)
11. Will the cooling unit continue to cool the refrigerator for 10 or 12 hours even though the current is shut off?
12. Can the back parts of all the shelves, even the lowest, be reached without kneeling or sitting down?
13. Has provision been made for keeping vegetables fresh and crisp?
14. Can the top of the refrigerator be used to "set things down for a moment" while the contents of the cabinet are being rearranged?
15. Is the refrigerator so designed and finished as to add to the attractiveness of the kitchen?
16. Has the experience of users over a considerable period of time shown that the refrigerator is long-lived and dependable?

Norge Gets Ready for Big Drive

(*Concluded from Page 1, Column 1*)

ranging from New Orleans to Minneapolis and from Denver to New York, have been signed up for the Norge franchise.

National advertising in such magazines as the *Saturday Evening Post*, *Better Homes and Gardens*, and *Good Housekeeping* has already begun, and it will be followed up by newspaper advertising in various cities which have strong Norge selling organizations.

An integrated set of sales helps is being distributed to all dealers and distributors.

"We have purposely held the 1931 Norge line down to three standard models," states Howard E. Blood, president of the Norge Corp. "These are sufficiently adaptable, we think, that with them the dealer can answer 91 per cent of all refrigeration requirements in the modern home.

"Because of reduced manufacturing costs, we have been able to extend distributive margins and reduce retail prices at the same time. Each Norge model is a piece of package merchandise, shipped completely equipped and assembled from the factory, ready to plug in. The entire mechanical assembly is removable and replaceable as a unit."

Featured in the Norge line this year is the Watervoir, a one-gallon beverage container located directly under the freezing chamber. It is made of crystal glass, and can be filled without removal from the cabinet.

Other Norge features include the Rollator rotary compressor, combination cold control and defrosting switch mounted inside the cabinet, waist-high shelves of longitudinal construction resting on Bakelite buttons, semi-vacuum type black door gaskets, self-closing porcelain ice compartment door, and a seamless porcelain food compartment with rounded corners. The hardware is chromium plated.

ELECTRIC REFRIGERATION SALES GAIN PREDICTED

By Standard Statistics Co., Inc.,
New York City

New York City—Sales of household products and supplies likely will proceed at sharply restricted levels during early future months.

Until public purchasing power is vastly improved, there is no reason to expect substantial growth in demand for such items as carpets, rugs, linoleum, electric washing, sewing and ironing machines, vacuum cleaners and other equipment which may be grouped in the semi-luxury class.

Mechanical refrigerators occupy a more favorable position, because of special appeal to a select group of individuals, and indications now are that 1931 unit sales will establish a new high record.

Ice demand, which is determined largely by weather, cannot be definitely forecast, but there is no present reason to expect less than normal consumption this spring and summer. Trade in soap and matches also is likely to be well sustained.

SEARS-ROEBUCK CO. PLANS SPRING SALES CAMPAIGN

(*Concluded from Page 1, Column 5*)

furnished by the home office, Mr. Garner said, although the local managers may write their own local advertisements if they wish. Window display material is also provided for use in retail stores.

The compressor, motor, condenser, and evaporator are mounted as a unit, which is placed in the top of the cabinet. The cabinets are shipped from the main store in Chicago, and the machine unit from the Sunbeam factory in Evansville. The customer slips the machine unit into the top of the cabinet, and the refrigerator is ready for operation.

The compressor is of the rotary type, and is direct connected to the motor. On the other side of the motor is the direct-connected fan, and the condenser. Sulphur dioxide is used for refrigerant. A special feature of the refrigerator is the cooling of compressor oil by circulation through tubes in the condenser.

A 1/6 h. p. Century motor, for either A. C. or D. C., drives the compressor and fan, while Penn thermostatic control maintains temperatures. A safety stop device automatically stops the motor should any disturbances arise on the outside electric line.

The two larger cabinets are insulated with 2½ in. of Dry-Zero, while the two small units have 2 in. of Dry-Zero. The hardware is all chromium-plated. Exteriors are finished with lacquer, while the interiors are of porcelain enamel. Broom-high legs characterize all models.

The 4 cu. ft. model has three ice-cube trays, with a total capacity of 30 ice-cubes. It stands 51 in. high, including legs, 24⅜ in. wide, and 20¼ in. deep. It has a shelf area of 8.26 sq. ft.

The 4½ cu. ft. size has a shelf area of 8.82 sq. ft., and its three ice-cube trays will freeze 63 ice-cubes. Its outside dimensions are 57⅜ in. high with the legs, 26⅝ in. wide, and 20 in. deep.

The next larger unit, the 5½ cu. ft. job, has a shelf area of 10.6 sq. ft. and four ice-cube trays which will provide 84 ice-cubes. It is 57⅞ in. high, 29¼ in. wide, and 22 1/16 in. deep.

The large 7½ cu. ft. refrigerator has a shelf area of 13.16 sq. ft. and an ice-cube freezing capacity of 84 cubes in the four trays. It stands 62⅛ in. high with the legs, and is 34 in. wide and 21 9/16 in. deep.

COPELAND CALLS MEETING IN PITTSBURGH

Pittsburgh—Copeland dealers and salesmen in this territory will attend a district convention here, April 10, to be held under the direction of the Zee-Rad Co., Inc.

W. D. McElhinny, vice-president in charge of sales for the Copeland Sales Co., Mt. Clemens, Mich., will head a party of officials which will address the convention.

TAKES TRUPAR FRANCHISE FOR LONG BEACH

Long Beach, Calif.—The Prest & Dean Radio Co. has recently been named representative for Trupar refrigeration in this city.

1,000,000 . . . ALREADY

. . . and now selling still faster with the 3 YEAR GUARANTEE

IN JUNE, 1927—the General Electric Refrigerator was unknown. Today there are one million in use. And this startling rate of acceptance is today actually being exceeded.

The General Electric 3-Year Guarantee is proving itself the most powerful sales magnet in the business. Ever since General Electric pioneered a 3-Year Guarantee—on the strength of brilliant performance by a million refrigerators—General Electric dealers have enjoyed unprecedented activity *and sales.*

General Electric writes a broad 3-Year Guarantee not alone on domestic refrigerators, but on commercial equipment. And General Electric provides the added protection of Monitor Top principles. The hermetically-sealed, self-oiled, quiet mechanism defies wear—gives even more than the 3-Year Guarantee promises. Both dealer and owner are protected.

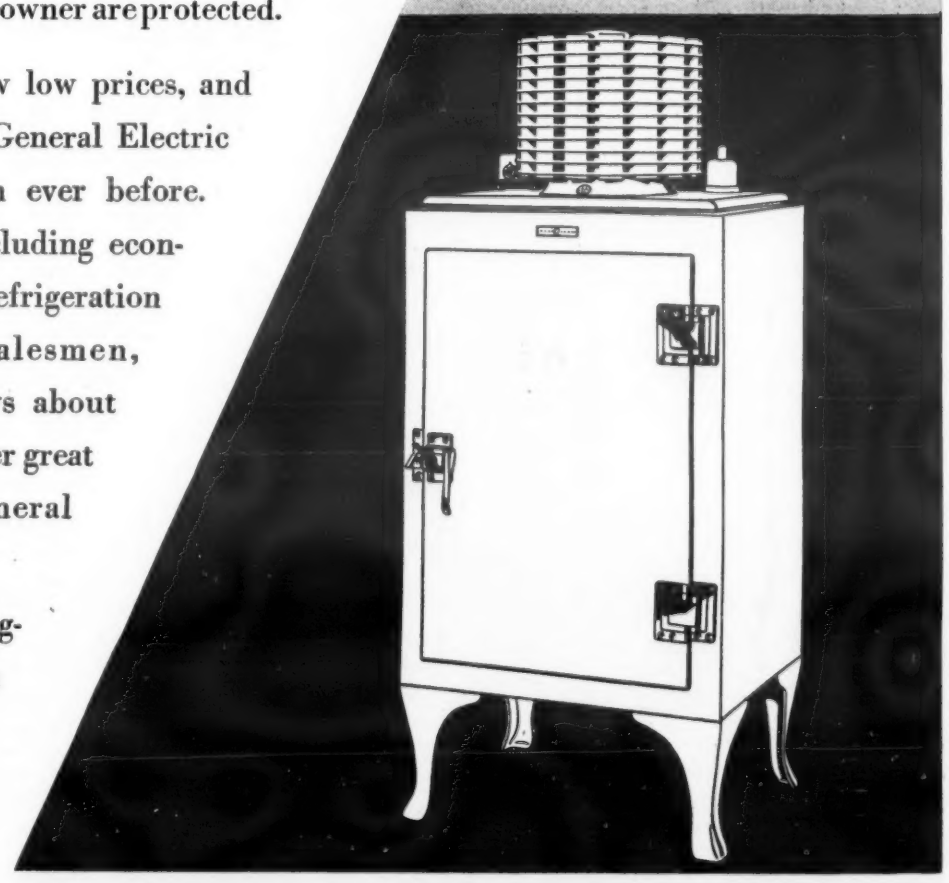
The 3-Year Guarantee, new low prices, and new refinements are selling General Electric Refrigeration even faster than ever before. Monitor Top performance—including economy—*keeps* General Electric Refrigeration well sold. Customers become salesmen, spreading nothing but GOOD news about General Electric Refrigerators—another great factor in the *GOOD* business of General Electric dealers.

NEW REFINEMENTS

Sliding shelves, new hardware and other refinements add important buying points.

LOWER PRICES

The lowest prices in General Electric history make it more economical to buy a General Electric as well as to own one.



INVEST IN AN ELECTRIC REFRIGERATOR

General Electric Company, Electric Refrigeration Department, Section DF41, Hanna Building, 1400 Euclid Ave., Cleveland, Ohio.

Join us in the General Electric Program, broadcast every Saturday evening, on a nation-wide N. B. C. network

GENERAL ELECTRIC

ALL-STEEL REFRIGERATOR

DOMESTIC, APARTMENT HOUSE AND COMMERCIAL REFRIGERATORS · ELECTRIC WATER COOLERS

BURNS CELEBRATES; HOLDS 12-DAY SHOW

Philadelphia—To celebrate his twentieth anniversary in business and the opening of new quarters, Judson C. Burns, distributor of General Electric refrigerators, is holding a 12-day refrigeration show. Beginning April 6, the show will run through April 8.

In the main showroom of these new quarters, the entire G. E. domestic and commercial line is on display during the show. The basement floor is occupied with a modern kitchen display.

A number of Philadelphia organizations will hold meetings in the Burns auditorium during the show.

Among these are the Apartment Owners' Association, which met April 7; the Retail Meat Dealers' Association, April 8; Ladies' Aid Society, American War Mothers, Pastors' Aid Society, and G. E. Owners, April 10; Philadelphia Apartment Owners' Association, Order of Amaranth, East Baptist Church Bible Union, April 14; P. O. S. of A., Allegheny M. E. Church Woman's Missionary Society, April 16; Bridesburg Mothers' Club, G. E. Owners, April 17.

Special program features have been arranged by inviting representatives of various publications to address the meetings held in the Burns auditorium during the show.

T. H. Beck, president, and John B. Kennedy, associate editor of *Collier's*, will make talks April 8. C. C. Sherlock, associate editor of the *Ladies' Home Journal*, will speak April 9. Katherine Fisher, director of the *Good Housekeeping Institute*, is scheduled for April 14; and Nancy Carey, of the *Philadelphia Public Ledger*, will talk April 16.

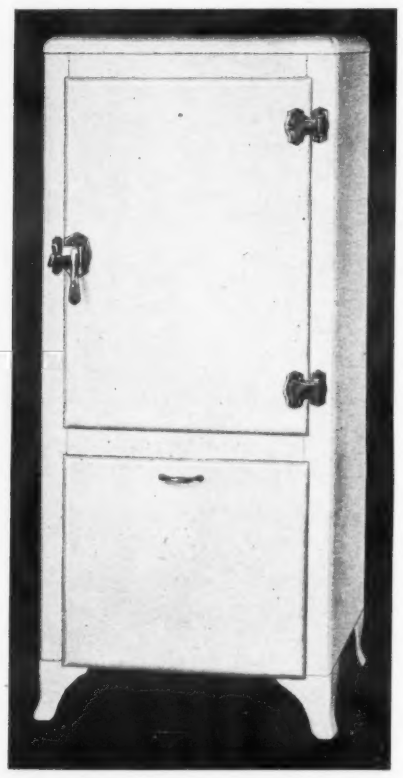
Saturday, April 11, has been designated as Dad's Day, at which time prospects will hear a discussion of refrigeration from the standpoint of the head of the house.

Edwina Nolan, home economics director of the General Electric refrigeration department, is the guest speaker for April 15. Saturday, April 18, the final day of the show, has been designated as Children's Day.

THE NEW

STARR FREEZE

Electric Refrigerators for 1931



of

Outstanding Beauty
Utmost Reliability
Incomparable Value

•

One of the New Styles

The Wabash

MODEL W

Three tray cooling unit.
Approx. 5 cu. ft. gross
Interior Porcelain.
Exterior Enamel.

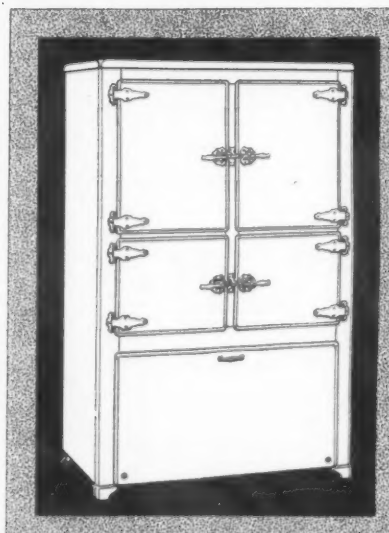
•

Our Liberal Dealer Proposition

is an unusual story of profit for you. Write at once for it.

THE STARR COMPANY

RICHMOND, INDIANA



Rex Cabinets... quality built... for every requirement in a range of sizes from 4 to 15 cubic feet. There is a Rex Cabinet for every job... Write! *REX offers special assistance to unit manufacturers in developing new lines.*

Rex

Rex Manufacturing Co. Inc.
Connersville, Indiana

New Norge Sink Type Cabinet

Built to fit the needs of "compressed apartment living," the new Norge sink type model 51S is designed to provide maximum storage in minimum space. It has a cubical content of 5.12 cu. ft. and a shelf area of 8 sq. ft. Three ice cube trays, 18 cubes each, have a total capacity of 4¼ pounds of ice.

THREE UTILITY SELLING MEASURES DEFEATED

(Concluded from Page 1, Column 3)

head and selling expense in marketing such apparatus or device is included in the operating expense of the public utility selling same."

The measure would have required utilities to purchase supplies from "the lowest and best responsible bidder," and prohibited buying through purchasing agencies in which the utilities or their officials might own an interest.

PENNSYLVANIA

Harrisburg, Pa.—Public utilities in the state of Pennsylvania will no longer be able to engage in the mercantile business, if a bill introduced in the house of the state legislature secures sufficient support for passage.

Included in this bill is a clause enjoining utilities from billing consumers on a monthly basis for purchases of merchandise.

COMPLETE TEXT OF PENNSYLVANIA BILL

AN ACT

Prohibiting public utility corporations of this Commonwealth from engaging in a mercantile business or to bill consumers of its service for purchases of goods, wares and merchandise, or to discontinue its service for failure of a consumer to pay for goods, wares or merchandise, or to acquire and thereafter own the stock of a mercantile corporation and conferring jurisdiction on the Public Service Commission of the Commonwealth of Pennsylvania, and the court of common pleas of Dauphin County to enforce this act:

WHEREAS, The laws of this Commonwealth prohibit the formation of a corporation for more than one purpose, and do not permit the formation of a corporation to do both a public utility business and a mercantile business, therefore:

Section 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same:* That it is hereby declared to be contrary to public policy and unlawful for any corporation of this Commonwealth incorporated to do a public utility business;

(a) To hereafter engage also in a mercantile business for the sale of goods, wares and merchandise, even though such goods, wares and merchandise are designed and capable of being used in the consumption of the service furnished by such corporation;

(b) To hereafter sell to any of its consumers of service any goods, wares and merchandise, and to enter into any contract for such purposes, or to bill any consumer of its service for the price of any goods, wares and merchandise sold to such consumer;

(c) To hereafter discontinue its public utility service to any consumer for failure of such consumer to pay for any goods, wares and merchandise sold to him or her by such corporation;

(d) To hereafter purchase or acquire and thereafter to own or possess the stock of any corporation of this or any state territory or country incorporated or authorized to do a mercantile business for the sale of goods, wares and merchandise.

Section 2. It shall be the duty of the Public Service Commission of the Commonwealth of Pennsylvania to enforce the provisions of this act, and upon complaint and hearing in the manner provided by the Public Service Company law to order any corporation to discontinue any violation of the provisions of this act. The Commission may institute in the name of the Commonwealth in the court of common pleas of Dauphin County injunction mandamus or other appropriate legal proceedings to restrain such violations or the orders of the Commission. The said court is hereby clothed with jurisdiction to hear and determine all such actions.

Section 3. The provisions and clauses of section one of this act are severable and if any of said provisions and clauses are held unconstitutional, the decision so holding shall not be construed to affect the validity of any other provision or clause of said section. It is hereby declared as the legislative intent that this act would have been enacted had such unconstitutional provision not been included.

TEXAS

Dallas—In an announcement from the office of H. E. Dill, secretary of the Retail Furniture Association of Texas, all furniture dealers in the state are called upon to support one of the several bills now before the Texas legislature to prohibit Public Utility concerns from selling merchandise of any kind. The bills that have already been introduced are designed to keep Public Utility companies from engaging in the sale of radios, electric refrigerators, electric appliances, or any kind of retail merchandising.

The announcement from Mr. Dill's office went out with the published program of the state convention of the Texas Retail Furniture Association, which meets in a three-day session at Houston, Texas, April 20, 21 and 22. The call for this legislative support was sent to more than 500 retail furniture dealers in the state, and said in part:

"At a conference of furniture, hardware, electricians, plumbers and radio dealers, held in Austin, Texas, Wednesday, March 25, decision was made to actively push one of the special bills which are now before the legislature, which would prohibit the sale of merchandise by Public Utilities. In recent years this has become a grave menace to the merchants over the entire country. Several states recognized this situation and have introduced bills and some have passed. Please act quickly on this and write your Representatives in Austin, telling them that you demand relief from this unfair competition which is robbing you and other merchants of business, which should not be be carried on by utilities. When a committee meeting is held at Austin we will have to have a representative attendance of furniture dealers from all over the state."

WAYNE REPRESENTATIVES MEET AT PORTLAND

Portland, Ore.—A three-day sales and service school for Wayne refrigeration dealers, salesmen and service men from Oregon, Idaho, Washington and Alaska points was recently held here.

R. C. Woods, president of the Home Equipment Co., local Wayne dealers, was chairman of the meetings.

N.E.M.A. RESEARCH COMMITTEE NAMED

(Concluded from Page 1, Column 1)

Standard Safety Code for Mechanical Refrigeration.

Mailings of the code booklet were completed February 18, it was reported. With the booklet letters were sent to 1,970 city officials, 547 newspaper editors, and 403 chambers of commerce and real estate boards, all in cities of 30,000 population or more.

The code booklet was also sent to 395 technical, trade, and municipal publications, to 66 state regulatory bodies, and to 109 presidents, directors, and secretaries of community safety councils.

One thousand copies are being held for distribution to members of the American Home Economics Association. A total of 12,500 copies of the code were printed.

A new committee was authorized and appointed—the Committee on Industrial Research. Carl D. Taylor of Westinghouse was named chairman of this committee. Other members are Howard E. Blood, Norge; J. M. Fernald, Kelvinator; G. M. Johnston, Universal Cooler; W. E. Landmesser, General Electric; and R. E. Smithson, Frigidaire.

This committee was appointed for the purpose of contacting and co-operating with industrial groups whose interests coincide to some extent with those of the Refrigeration Division of the N. E. M. A.

The next meeting of the group is scheduled for April 22 at the headquarters of the association in New York City. Meetings will be held monthly for a time.

The following men attended the meeting: Louis Ruthenberg, representing Copeland; T. K. Quinn and W. E. Landmesser, representing General Electric; E. G. Biechler, R. E. Smithson and Harry Williams, representing Frigidaire; George W. Mason, C. C. Spreen and J. M. Fernald, representing Kelvinator; Col. Frank E. Smith and E. T. Williams, representing Servel; G. M. Johnston, representing Universal Cooler; Harry H. Whittingham, representing Norge; Robert Frazier, representing Tennessee Furniture; Carl Taylor and M. C. Terry, representing Westinghouse; H. J. Hunt and G. G. Lindsay, representing Trupar; and A. W. Berresford and E. S. Aumend, representing N. E. M. A.

MAJESTIC REFRIGERATION PRODUCTION RESUMED

(Concluded from Page 1, Column 4)

in its place is a one-stage unloader. The defrosting switch is now on the "coldial" temperature control.

More than 90,000 unfilled orders for Majestic electric refrigerators are on hand, according to President B. J. Grigsby of the Grigsby-Grunow Co. Deliveries of these orders will be completed by June, he predicts. Some 30,000 machines were sold last fall before production ceased.

Employment was given to 2,000 persons when the refrigerator plants were reopened last week.

At present, production is limited to a few hundred machines a day, but within a week 1,000 complete jobs will come off the final assembly line, factory officials say.

When a capacity production schedule is attained, more than 5,500 persons will be employed in the refrigerator plants alone.

Eventually the Grigsby-Grunow Co., which has just absorbed the Majestic Household Utilities Corp., will be rename Majestic Corp., officials state. This action is not expected in the immediate future, however.

TRUPAR OFFICIALS PLAN NEW EXPANSION POLICY

(Concluded from Page 1, Column 5)

are being awarded, and new territories opened.

Sales promotion helps in the form of direct mail literature and planned selling campaigns are now being prepared by the home office.

The J. Horace Lytle Co., which has recently been appointed to handle advertising for the Mayflower line, is contracting for newspaper advertising space in cities which have good Mayflower sales outlets. Radio and outdoor poster advertising will also be used.

DAMAGE SUIT SETTLED OUTSIDE OF COURT

Kalamazoo, Mich.—Settlement was made outside of court Monday, April 6, on the damage suit brought by Clyde Buman against S. A. Cowell, local Frigidaire dealer; F. C. Mathews & Co., of Grand Rapids, state distributor; and the Frigidaire Corp. for injuries sustained from sulphur dioxide gas which escaped when a valve was accidentally broken by a serviceman.

YOUR ANSWER

to these questions will tell you what to do!

1. Is the electric refrigerator I am considering as well, and favorably known as the Kelvinator?

?

2. Is the company behind it as progressive, as liberal, and as fair as Kelvinator, and does its Sales Agreement give me as good an opportunity to make money and build a successful business as I would have with Kelvinator?

?

3. Is it as good a value at the price as Kelvinator?

?

4. How many new and important engineering advancements has the company pioneered and introduced in the last three years as compared with Kelvinator's splendid engineering record?

?

5. With it, would I be getting the new engineering developments *first*—or would I get them after some competitor had gotten the publicity, the glory, and the PROFITS out of them?

?

6. Will this line I am considering perform as well as Kelvinator and has it as many outstanding sales features to talk about as Kelvinator?

?

7. Is the line as complete as the Kelvinator line—does it reach every market like Kelvinator does—and if not, how many sales will I lose because I will not have a Model at the price the prospect wants, and can afford, to pay?

8. Doesn't the Kelvinator Sales Agreement, with the leading value in every price field—the high, low, and medium price—give me a better opportunity for volume and profits?

?

9. Can I expect, from this line, the same steady, healthy increase in volume and profit every year that can be had with the Kelvinator line?

?

10. Does the company hold as prominent a place in the industry as Kelvinator—and has it a group of executives who have the experience and ability to keep it there?

?

11. Will I be able to *keep* my profits with this line, as I would with Kelvinator, or, will I have to spend a big percentage of these profits to keep my owners satisfied and break down sales resistance I would not have with Kelvinator?

?

12. Wouldn't I be further ahead—in every way—five years from now—with the *full coverage, full profit* Kelvinator line than I would be with the line I am considering?

?

—and finally, hadn't I better see if I can get the Kelvinator Sales Agreement for this territory?

KELVINATOR CORPORATION
14245 Plymouth Road, Detroit, Michigan
Kelvinator of Canada, Ltd., London, Ontario
Kelvinator Limited, London, England

Kelvinator

C O U P O N

KELVINATOR CORPORATION,
14245 Plymouth Road, Detroit, Michigan

Gentlemen: I am interested in the Kelvinator Sales Agreement. Send the facts.

Name_____

Street Address_____

City_____ State_____ (270)

Electric Power Industry Has Vast Resources, Proportions

By Paul S. Clapp*
Managing Director, N. E. L. A.

A TRUE picture of the entire electric power industry has never been painted. It would require statistical information not yet collected. It would require knowledge and comprehension of a myriad of forces related to this stupendous job of electrical development. It would include portrayal of the industry's complex and diverse make-up, of a thousand independent elements, competing and co-operating, but all at work on some phase of the same job; of the interdependence of these many elements; of the work done; the employees who earn their livelihood in the business; the monthly or weekly payrolls; the taxes paid; the over-all volume of business; the quantities and variety of materials utilized; the capital invested; and the number of individuals who are owners through their investments.

Then, all these need to be understood in their relation to the nation's business and industrial life; and perhaps of greatest import, of the part use of electricity plays in the steady forward march in standards of living of the people.

For no matter how much electrical performance is stated in terms of statistics and investments, the real accomplishment is measured by the huge burden of human toil which electricity has lifted from the backs of men and women, and by the added earning power, comfort, beauty, and larger opportunity for development and expression of individualism it has made possible.

What is included in the electric power industry?

*Speech before Electrical Association of Philadelphia.

The industry includes the *manufacturer* of electrical equipment, materials, supplies, and utilization devices, who also has a large part in research and new development; it includes the *contractor-dealer*, who undertakes construction, makes repairs, wires premises, and installs; it includes the *wholesaler-jobber*, who provides distribution facilities for materials and merchandise; it includes the *electric utility company*, which generates and delivers on instant call an adequate and reliable supply of electric energy to actuate the millions of electrical devices.

All these are also related in some way to merchandising of appliances, and along with them in this job are the hardware store, furniture dealer, department store, drug trades, and other merchandisers. There is also a live and creative *electrical trade press.*

These together directly make up the electric power industry, although it is altogether possible that I have overlooked some important elements who will take umbrage for the omission.

I have endeavored as best I could to gather together certain concrete information on the electric power industry as a whole. It is incomplete, but it will assist to a clearer visualization.

There are at least 950,000 men and women who normally earn their daily living in this business. There are 350,000 employed by manufacturers; 265,000 by contractor-dealers; 275,000 by electric utility companies. Thousands are in the other fields.

Almost every conceivable character of ability and talent is enlisted. Upon these individuals rests the dependence in family and home of over three million of our people. We must never forget that it is individuals who conceive and do things.

This great human force engaged in the business is the industry's most valuable asset. To these persons credit is due for accomplishments so far attained, and in them lies assurance to the nation of aggressive, progressive electrical development in the future.

The annual payroll of the industry is well over one billion three hundred million dollars. Of this sum, 510 million is in the manufacturers' pay envelopes; 230 million in the contractor-dealers'; 435 million in the electric utility companies'.

The sum paid out in wages and salaries should be thought of in terms of buying power and contribution to general business and trade, released, as it is, in practically every city, town and village of the country.

Large Weekly Payroll

The proportions can perhaps be better comprehended when I tell you that the pay envelope amounts normally to some 25 million dollars each week.

It is more difficult to accurately estimate the total gross volume of business done by the industry because of overlaps. I place the total, conservatively, at four and three-quarter billion dollars a year.

This is for the equipment, materials, and supplies entering into the construction and operation of electric supply facilities purchased from electrical manufacturers; for services in wiring, installation, and repair; for electrical merchandise and utilization equipment, such as motors, household appliances, lamps, and radios, together with the total amount paid for electricity by the 24 million customers of the electric utility companies.

This volume of business should be looked at from the standpoint of service rendered to customers, and also in terms of its stabilizing and stimulating effects on business generally through purchase from other industries of enormous quantities of materials, such as steel, copper, coal, rubber, cement, glass, poles, and many other materials, the production of which gives jobs to thousands of other workers.

Investment Over 13 Billion Dollars

The total investment by manufacturers, utility companies, wholesalers, contractor-dealers, and general merchandisers, in fixed facilities for rendering this rounded-out electric service, conservatively speaking, amounts to at least thirteen and a half billion dollars. I believe the figure is low.

This investment is participated in by at least three million individual citizens, in all walks of life, and a very large proportion is in small holdings, which represent the savings and accumulations for future security of these investors.

In no basic industry of comparable proportions is there such widespread participation in ownership. The electric power industry has been a leader in advocacy of this distinctly American principle.

I have endeavored briefly to visualize certain over-all proportions of the electric power industry which, summarizing, employs 950,000 persons; has a payroll of 25 million dollars weekly; does an annual business of four and three-quarter billion dollars; is owned by over three million citizens; and is rendering electric service at the present time to more than 80 million people.

This could be amplified. It would be of interest to determine the total taxes hinging for their payment upon this business—not only direct property and earnings taxes, but taxes paid as well by individuals on their investments.

Suffice it to say that the electric light and power companies alone pay 200 million dollars annually for taxes. This is one-third of the total amount paid by all the 20 million domestic consumers together for their electric service.

It would be helpful indeed if there were no taxes, for if they were removed, and could all be applied to domestic rates, the domestic bills could go down 33⅓%.

No Power Trust

Now that I have visualized the electric power industry as a whole, it is highly important that I at once anticipate renewal of the clamor almost sure to arise that there is a "power trust," and that the "trust" is even bigger than our critics had imagined.

At the outset, I strongly assert that there is no "power trust."

There are some 25,000 electrical contractors and contractor-dealers in the country, in the keenest of competition in every local community. Certainly, there is no "trust" there.

There are some 1,800 electrical manufacturers, large ones and small ones, likewise in keenest of competition. For practically every household appliance, the purchaser has wide choice in price, style and make. Electric refrigerators, ranges, washing machines, irons, are examples.

But what of the electric utilities? True it is, they are regulated monopolies in their territories of operation. The public has said, we do not want two power companies, any more than we want two telephone companies.

As to concentration of control, I refer you to government records. The Federal Trade Commission, after two years' exhaustive study, covering companies producing 95% of the electrical output, and their relations to the General Electric Company, reported, in February, 1927:

(a) That it could not find any "power trust."

(b) That no company, group or combination controls more than 12% of the nation's electrical energy.

(c) That the General Electric Company is a manufacturer of electrical machinery, and it not even an appreciable factor in the generation and distribution of electric energy.

Indeed, those informed know that the electrical industry, broadly conceived, is made up literally of thousands of independent elements, still far removed from that degree of co-operation which should exist.

They vary in size from the one-man shop to large corporations. They are manned and staffed by individuals with varying degrees of business capacity, with limitless variety of opinion as to how things can best be done, subject to all the mistakes and frailities of human beings in any business, yet including outstanding leaders in every field they touch.

All these are at work on some phase of a job they realize to be of immense importance, and one carrying with it an unusual public responsibility.

There is the closest interdependence between those engaged in one branch of this business and those engaged in every branch of it. This interdependence is not always clear even to those in the business.

Lower prices of electricity by the utility company to the consumer hinge almost entirely on quantity of electricity consumed and the time of day it is required.

The company has large investments in power houses, lines and facilities for delivering service—on an average of $495 for each customer. There are certain costs, such as reading meters, billing, fixed charges, maintenance of lines, general overhead, incurred for each customer whether he uses a large or small quantity of electricity, or none at all.

Increased use at right hours makes possible lowered prices, but the utility company cannot sell raw electricity. This can only follow after appliances have been sold to the consumer, installed, and placed in operation.

The sale of electrical appliances is largely in the hands of the manufacturers, hardware stores, furniture dealers, department stores, drug stores, and other merchandisers.

On the average, the utility companies do less than 30% of the total volume of household appliance business—it will fall to 15% over-the-counter merchandise. The wiring of homes and premises rests almost entirely with contractor-dealers.

Domestic Market Possibilities

Let us look for a moment at this home market so that we may get a measure of its possibilities. From figures made available through some of our very excellent electrical business papers, we learn that there are only about four appliances per home now being used in the 20,500,000 wired homes in the country.

From another source which has compiled figures based on a number of local surveys, we learn that a reasonably adequately wired home, in comparison with the present average inadequately wired home, means an addition of about $75.00 in wiring, and results in an increase of approximately 50% in energy consumption, 30% in the use of incandescent lamps, 15% in the sale of portable lamps, and 30% in the value of appliances.

We are also told that less than 2% of the homes are adequately wired, so it is not necessary for me to carry this discussion any further to show you that if all homes were brought up to a reasonable standard of adequacy of wiring, there is a reservoir of business behind us amounting to several billions of dollars.

Increased utilization of electricity in homes, through vigorous promotion and sale of electrical appliances, benefits all parties in the industry. It is of extreme importance to the customers. It is a sort of endless cycle.

Increased utilization of electric service by domestic consumers means decreased rates; decreased rates mean increased opportunity to these consumers to utilize electrical equipment, and this inevitably opens up a wider market for the sale of electrical appliances, electrical machinery, wiring of homes, and the whole category of services employed in rendering electric service.

This effect of larger use of electric service is observed if one reviews the period since 1914. In 1914, the average domestic consumer used 268 kilowatt-hours annually and paid 8.3 cents per kilowatt-hour.

Electrical Era Ahead

By the end of 1930, the consumption had increased to 548 kilowatt-hours annually, and the average price had dropped to 6.04 cents per kilowatt-hour.

Electrification in the United States has progressed until the American people, who are only 7% of the world's population, enjoy the advantage of as much electricity as all the rest of the people of the world put together. A good job has been done, but we must not let backsight view of this and self-praise blind us to what is ahead.

The electrical era has just begun. Ahead lie enormous opportunities. Only one home in three uses electrical appliances; only three out of four are wired for electricity, and these inadequately; only 2% of the railroad mileage is electrified; industry is not motorized completely, and has done relatively little with electric heating.

Highway lighting, higher levels of general illumination, health appliances, commercial cooking, electrical advertising, all offer enormous possibilities.

There are hundreds of different electric appliances for household use, many of them unknown to most of our customers. The power market is just barely opened, and ahead, still in the laboratory stages, are new uses which will be ours to promote and sell tomorrow.

This market opportunity is open in every single community in the United States. No city or town is within sight of saturation. This great electrical industry, which I have so far visualized is, after all, essentially a local proposition.

In Philadelphia, the interest of your citizens is in the performance of those of you, here at home, upon whom they depend for their electric equipment, facilities and service. So it is in every city, town and village throughout the nation.

NORGE

. . . . a great refrigerator for the User and the

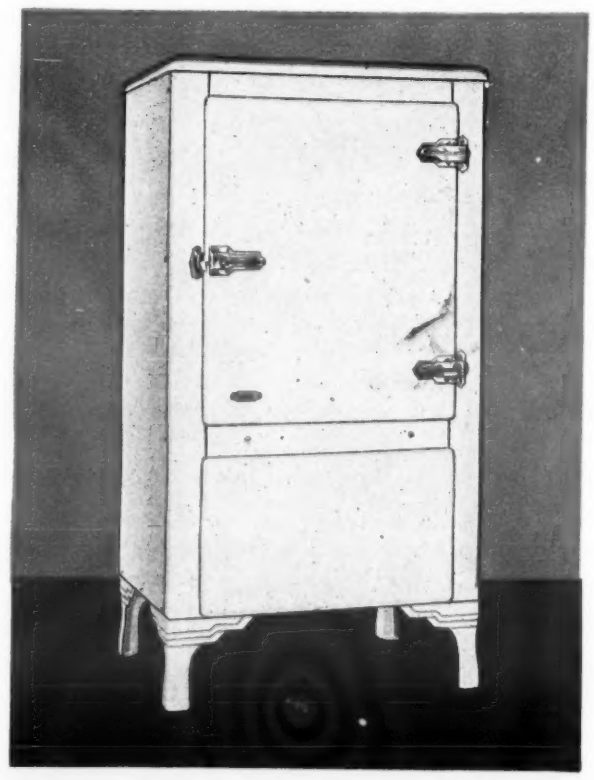
DEALER

NORGE has the Rollator, the simple compressor with just three moving parts, running in oil. It's practically everlasting, giving unfailing service (normal refrigeration and quick freezing) year after year, during extreme summer heat just as at any other time. *Norge is a great refrigerator for the User!*

Mechanically Norge is service free for the dealer. If any important mechanical adjustment ever does become necessary, the machine assembly is quickly removable and replaceable as a *unit. Norge is a great refrigerator for the Dealer!*

A brand new sales plan, with powerful advertising and selling tools, is now operating. The discounts have been made especially attractive, too. *Norge is a great refrigerator for the Merchandiser!*

Norge Corporation is a Division of Borg-Warner Corporation, originators of free wheeling and many other important automotive advancements. Every American motor car made today contains material made by Borg-Warner. *Norge Refrigerator has great resources backing it.*



Norge dealership appointments are being made rapidly. Earliest inquiries will receive first consideration in your locality. The coupon will bring you complete details of the *Norge . . . it's package merchandise . . . a short line . . . service free.*

NORGE CORPORATION, Division of Borg-Warner
658 EAST WOODBRIDGE ST., DETROIT, MICH.

Norge Corporation
658 East Woodbridge St., Detroit, Mich.
I would like full details of Norge and the Plan.
Name .....
Address .....
City ..... State .....

NORGE
WITH ROLLATOR

EVERY AMERICAN CAR MADE TODAY CONTAINS MATERIAL MADE BY BORG-WARNER CORPORATION

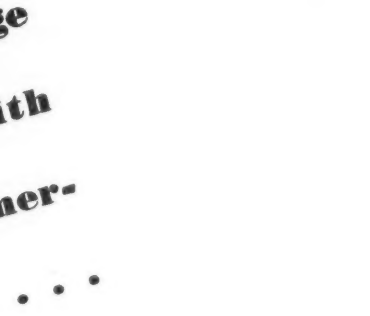
A PAGE FROM THE DEALER'S SALES BOOK*

showing how Refrigerator Salesmen are telling the *Dry-Zero* Story!

KEEPING THE COLD IN

The airtight and moisture-proof Norge cabinet is insulated throughout with DRY-ZERO, the most efficient commercial insulant that is known to science . . . The tropical Ceiba tree bears pods containing fiber which becomes, after processing, DRY-ZERO, the world's finest insulant . . . free from all odors and decay; permanent, and with such an aversion to moisture that it is used by the U. S. Navy . . . for life-preservers!

Showing the Ceiba pods after they are collected by natives and brought to the U. S. for processing



DRY-ZERO is a felt-like layer of Ceiba-fibers, carded and grained, then sealed in easily handled batts

DRY-ZERO — after being removed from the pods of the Ceiba tree, a lush growth on the tropical island of Java

[16]

* USED BY NORGE SALESMEN

DRY-ZERO CORPORATION, MERCHANDISE MART, CHICAGO, ILLINOIS Canadian Office: 465 Parliament Street, Toronto

DRY·ZERO

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

MERCHANDISING SECTION

ELECTRIC REFRIGERATION NEWS

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Higher Prices

ABOAST of the electric refrigeration industry is that while other lines of business dropped off sharply in the midst of a world-wide depression last year, refrigeration sales records reached new peaks.

Notwithstanding this indubitable fact, it is entirely possible that many manufacturers did not gather unto themselves all the profits that the rising tide of the industry's sales volume might have indicated —chiefly because prices were too low.

That the industry is preparing to remedy this situation and gain the full benefit of a constantly increasing public acceptance of electric refrigeration is evidenced by the well-defined trend toward higher prices.

Two factors in the 1930 situation were largely responsible for the action of the industry in reducing prices to the low-water mark: the general depression, with its presumed demand for cheaper goods and smaller expenditures, and the Majestic scare.

Majestic Incident

The latter incident undoubtedly had a great deal to do with the decision of many of the larger manufacturers to put out low-priced jobs, and with the bargain rates announced by many of the smaller companies.

All over the nation Majestic radio dealers were advertising: "Wait for the $100 refrigerator." Grigsby-Grunow officials were doubtless honest in their belief that it could be done. They had done a similar job in the radio industry, and were respected for it. And just as people would be inclined to believe Henry Ford, should he announce he was going to produce an electric refrigerator to sell for less than a hundred dollars, so was the general public ready to accept the Majestic prophecy.

Cheaper Models

In order to sell refrigerators against this threat of an unusual price, many manufacturers believed it was necessary to make a downward revision in their quotations, and to bring out new cheaper models. New companies entering the field, unacquainted with selling costs, advertised complete units to sell for less than $150.

When Majestic finally came out with a refrigerator which was listed at twice the predicted mark, tension was relieved. Here was a company with a proved record for getting production costs down to a minimum, and with a ready-made, tested selling organization. They had discovered that an electric refrigerator must have certain parts and materials which are comparatively costly, and that even their well-equipped factory couldn't make one of their machines to sell for a hundred dollars. If Majestic couldn't do it, the industry was convinced nobody could.

Upward Tendency

Thus it is that 1931 has seen a gradual upward tendency in list prices. In some cases, distributor and dealer discounts have been made longer, for the industry has come to the conclusion that rapid turnover and numerous defaults among selling organizations represent waste and an unhealthy condition.

New companies are taking their cue from the casualties of 1930, and are beginning with reasonably-set quotations. Majestic, claiming that scarcely a penny was made out of the 30,000 of its machines sold last year, has boosted its prices considerably. The Chicago concern also wishes to make its prices cover future service costs on its machines, which are being sold under a three-year guarantee. This warranty, which now has been adopted by three other manufacturers, will also tend to push up list prices, for it has the effect of adding service charges to the original cost of the machine.

Luxury Appeal

The tremendous pressure placed on prices by the valley in the business cycle last year also appears to have abated somewhat. Although business is still far from "normal," considerable confidence seems to have returned to the buying public.

Especially significant is the fact that "luxury appeal" in advertising seems to be gaining ascendancy again. That the public responds to this type of message has been proved over and over.

As a negative proof, one can cite the example of the many restaurants which have abolished tipping and gone broke as a result. For additional demonstration that today's American will buy almost anything which makes him feel well-to-do, one has only to examine the records of companies which have sounded this note in their advertising. Even cigarettes and Ford cars are sold with the aid of appeal to desires for luxury.

Good Year Ahead

Many indications point toward a good year for the electric refrigeration industry in 1931. Distributors and dealers in widely scattered sections of the country are calling attention to increases in their sales. There are evidences of increasing public favor toward electric refrigeration. New markets, particularly in the commercial field, are being tapped. And with the advent of better equipment, higher prices, and longer discounts, it would seem that considerable money should be made in the industry this year.

GLEANINGS
FROM RECENT PERIODICALS

"Of all the great inventions of modern times the one that has given me most comfort and joy is one that is seldom heard of, to-wit, the thermostat. I was amazed, some time ago, to hear that it was invented at least a generation ago. I first heard of it during the war, when some kind friend suggested that I throw out the coal furnace that was making steam in my house and put in a gas furnace. Naturally enough, I hesitated, for the human mind is so constituted.

"But the day I finally succumbed must remain ever memorable in my annals, for it saw me move at one leap from an inferno into a sort of paradise. Everyone will recall how bad the coal was in those heroic days. The patriotic anthracite men loaded their culm-piles on cars, and sold them to householders all over the East. Not a furnace man was in practice in my neighborhood: all of them were working in the shipyards at $15 a day.

"So I had to shovel coal myself, and not only shovel coal, but sift ashes. It was a truly dreadful experience. Worse, my house was always either too hot or too cold. When a few pieces of actual coal appeared in the mass of slate, the temperature leaped up to 85 degrees, but most of the time it was between 45 and 50.

"The thermostat changed all that, and in an instant. I simply set it at 68 degrees, and then went on about my business. Whenever the temperature in the house went up to 70 it automatically turned off the gas under the furnace in the cellar, and there was an immediate return to 68.

"And if the mercury, keeping on, dropped to 66, then the gas went on again, and the temperature was soon 68 once again. It would take the limber, vibrant, air-cooled tongue of a Rabbi Stephen S. Wise, nay, of a William Jennings Bryan, to describe my relief and comfort.

"I began to feel like a man liberated from the death-house. I was never too hot or too cold. I had no coal to heave, no ashes to sift. My house became so clean that I could wear a shirt five days. I began to feel like work and rapidly turned out a series of imperishable contributions to the national letters.

"My temper improved so vastly that my family began to suspect senile changes. Moreover, my cellar became as clean as the rest of the house, and as roomy as a barn. I put in a cedar closet big enough to hold my immense wardrobe. I added a vault for papers, a carpenter shop, and a praying chamber.

"For all these boons and usufructs I was indebted to the inventor of the thermostat, a simple device but incomparable. I'd print his name here, but unfortunately I forget it. He was one of the great benefactors of humanity. I wouldn't swap him for a dozen Marconis, a regiment of Bells, or a whole army corps of Edisons. . . The man who devised the thermostats, at all events in my opinion, was a hero comparable to Shakespeare, Michelangelo or Beethoven."—H. L. Mencken in *The American Mercury*.

Letters from Readers

George Belsey Limits Experiment

Los Angeles, Calif.

Editor:

I doubt the wisdom of writing the article you request on our experiment in merchandising appliances other than refrigerators. A news story on such an idea frequently is misinterpreted as sponsorship, and as you recognize in your letter, it is nothing but an experiment, the merit of which we will know much more about in another six months.

I will be glad some time late in the fall to give you my opinion about it, after we have had a little time to find how it works.

I might say that we are trying to find out whether the refrigerator specialist can continue to do a good job on refrigerators when he has the opportunity to represent other appliances, as well.

Our retail operation, in fact our whole program for refrigerators in this territory, has been premised on aggressive specialization on refrigerator sales.

Most of our dealers are exclusive refrigerator dealers and have their own staff of retail salesmen working in the territory entirely on refrigerators. This method has been successful in producing a good volume of business, and many of the specialists, although they work on strictly commission basis, have made good compensation.

We know, of course, that there is an opportunity for increasing compensation to those men in refrigerator sales, and will not do anything to lessen the drive that they put on refrigerators.

We thought that we would take one branch, where we had sufficient store display space, and add to that operation other appliances, particularly ranges, washing machines and radios, so that the salesman in his field work might be able to profit even in a small way if he is able to pick up orders or good leads on these other appliances.

The Hollywood Branch, where we are trying this experiment, has been an effective, successful refrigerator branch. It has a good sales personnel and an able manager. We expect them to make or exceed their quota on refrigerators. We will not be satisfied with the results of the experiment if they do not do so.

Retailers of refrigerators can only make profits in the business through a good volume of sales. I think that it would be unfortunate for the refrigerator industry, as well as for the retailers themselves, for us to do anything at this time which might result in dissipating refrigerator sales effort.

Our own organization has been emphatically told that we will not put other appliances in our fourteen other branches until this experiment has been demonstrated to be a wise one, and our exclusive dealers are being counselled to avoid jumping to the conclusion that they can add to the profits and success of their business by taking on these other lines.

Give us a little time to test the merit of this idea and we will be glad to give you the benefit of what we find out.

GEORGE BELSEY,
President, the George Belsey Co., Ltd., Distributor of General Electric Refrigerators.

Water Cooling Statistics

Mt. Clemens, Mich.

Editor:

In going over again Mr. Brack's letter of February 26th, in which he calls our attention to the proposed "Engineering Section, to be printed on green paper," I find this statement in the fourth paragraph:

"It is noteworthy that 22% of the commercial units sold in 1930 were for water cooling applications."

This is a rather startling statement to me, and I would appreciate very much a verification of this statement and any report that you can make of the sources from which this figure is derived.

That is, the 22% of all commercial units.

If you can give me this information, I want to pass it on at once to our Messrs. Ruthenburg, McElhinny and Hadden.

R. M. DOUGLASS,
Manager, Advertising and Sales Promotion, Copeland Sales Co.

Answer:

The analysis of electric refrigeration equipment sales shown on page 2 of the January 14 issue is based on figures furnished by the manufacturers. This represents the first authoritative record of total industry sales ever published.

We have every reason to believe that the data on household utilities, water coolers, ice cream cabinets, and complete commercial units was quite accurate.

It was necessary, however, to estimate the total value of commercial equipment sales, since the figures on commercial cabinets, coolers, and display cases were incomplete.

We believe that the estimate that 22% of the commercial units are water coolers is substantially correct. In addition to the concentration of effort on water cooler business by one of the largest manufacturers, there is also considerable activity in this field on the part of companies specializing in water cooler equipment.

EDITOR.

Anent Public Utilities

Greenville, S. C.

Editor:

I have just read the March 25th issue of the ELECTRIC REFRIGERATION NEWS, containing articles about states that have prohibited merchandising by public utilities.

I am attaching a general letter from a factory representative explaining what the utility will do for its customers, (this same information is advertised), which indicates the type of competition offered by the Southern Public Utilities.

The phrase, "Especially noteworthy is the fact that your company does not add interest or carrying charges to the price of the Kelvinator they sell you," is very interesting.

The Southern Public Utilities also quote the following prices on Kelvinators Y-5 $174.50, S-5 $245.00, delivered and installed, with 5% off of these prices for cash. Other agencies on Kelvinators in the state list the Y-5 at $189.50, S-5 at $270.00, no discount for cash, and 4% to 6% per annum financing charge.

Is there any wonder that individual merchants and salesmen become disgusted with such tactics and seek relief through legislative channels?

HERBERT E. NUNN.

Hornell, N. Y.

Editor:

I have read your editorial on the handling of electrical appliances by the public utility corporations in your issue of March 25th, and thought the situation well stated.

However, it seems to me that one point against such sale of appliances that has been stressed too little is that often the public utility corporation is able to grant time terms which would be prohibitive for the relatively small dealer and considered poor business by even a larger dealer.

The dealer must carry his installment paper himself, in which case he pays for the merchandise and waits a year or more for his money; or must handle it through a finance company.

It takes a great deal of capital for the dealer to carry the paper, and the finance company is averse to long time paper with small installments. It may be said that the buyer pays for the extra accommodation, but somebody loses.

The public utility, however, will carry the account for as long as two years and charge the installments against the monthly consumption account of the customer.

It has plenty of capital; and if it needs more, it has only to sell some more stock or put out another bond issue—methods that are not always possible for the smaller corporation or the dealer.

Many salesmen use long terms as a selling argument, and many buyers will purchase almost anything with a sales appeal if the terms are stretched out far enough so that the payments are small and easy to meet.

This, I think, is the principal reason for the agitation to prohibit by law the selling of refrigerators and other appliances by the public utility corporations; and from the standpoint of the dealer it seems a very good reason.

L. G. ROBBINS,
Vice-Pres., A. J. Deer Co., Inc.
Manufacturer of Royal electric coffee mills, meat choppers, meat slicers, coffee roasting machines, and peanut butter machines.

He Believes In His Government

San Bernardino, Calif.

Dept. of Interior, Washington, D. C.:

Please put my name on the mailing list of REFRIGERATION NEWS.

Thanks.

JAMES C. GRIZZEL.

NOTE:

This letter was forwarded by the Secretary of the U. S. Department of the Interior to N. W. Ayer & Son, Philadelphia advertising agency, which publishes a directory of publications. The Ayer organization, in turn, sent the letter to ELECTRIC REFRIGERATION NEWS.

Mr. Grizzel, who apparently believes in writing to the government about it, will receive a sample copy of the NEWS.

EDITOR.

JANUARY 1931 FEBRUARY 1931

EVEN *in these* LEAN MONTHS...

ELECTROLUX SALES *JUMP* 218%

in Metropolitan New York

WE thought our representatives in New York had done a fine selling job in January and February, 1930. But when we saw the returns for the same months in 1931, the figures hardly seemed believable.

More than three refrigerators for every one sold in 1930 . . . a total increase of thousands of boxes . . . a jump of 218% over 1930!

Over the whole year, too, there has been a tremendous gain. Not only in New York but throughout the country.

Electrolux is the one refrigerator that offers everything home owners and tenants want. Silent, simple, dependable operation—freedom from trouble—economical upkeep—handsome cabinets. It is only natural that Electrolux sales should gain momentum as people become more and more familiar with its advantages. Gas refrigeration so completely fills their expectations that they want to tell their friends about it. This word-of-mouth advertising is just as important as the powerful printed advertising that backs Electrolux.

Housewives now prefer Electrolux, builders and architects recommend it, owners want it to speed rentals, to free them from refrigerator complaints and annoyance. That's why Electrolux sales skyrocket from month to month. Electrolux Sales, Inc., Evansville, Ind.

ELECTROLUX

THE *Gas* REFRIGERATOR

A tiny gas flame takes the *place of all moving parts*

APPLICATION OF INSTALLMENT SELLING

LONG-TIME BUYING LURES PROSPECTS

W. H. Crawford
Vice-President, General Contract Purchase Corp.

NONE of us can deny that the people of the United States are thinking and talking about electric refrigeration—in other words, they are electric refrigeration conscious. Surely every family needs and would like to have an electric refrigerator.

In spite of the big demand, there are some men in selling organizations who find it difficult to close enough sales to insure them of a satisfactory income. These men have no doubt been so busy doing the thing the hard way they just haven't had time to see the easy way.

If the necessity exists and the desire to possess is evident—the reason for failure is obvious. The salesman has sold the refrigerator to the prospects, but he failed to sell them on a plan by which it could be purchased.

It is not enough to make prospects want to buy; it is essential to sell them a buying method. However successfully we may arouse the buying impulse, unless we make it easy and convenient to buy, it is most likely that the prospect will lose interest.

In arousing interest and creating desire in the prospect's mind, advertising has blazed the trail for the salesman. The average salesman experiences little if any trouble in stirring up the prospect's enthusiasm during the demonstration.

Sales Resistance

Such enthusiasm is climaxed with the inevitable question that is encountered in every sales interview—"What is the price of the refrigerator?" Only too often the reaction from that point shows the prospect going into a sinking spell, and in his delirium shouting—"I can't afford it"—"Will buy later" or "Need other things."

Therefore, price is the resistance. Price is the barrier the average salesman finds troublesome to get over—it seems to be a chronic disease, with more fatal results than all other resistances put together.

The problem of price is most effectively solved by an intelligent application of installment selling. There is no substitute for installment selling in conquering the majority of cases of this usually fatal resistance.

Installment selling offers the greatest opportunity for increased sales. Volume and installment selling are directly related. That has proved true in the sale of all other major household appliances, and is equally true in the sale of electric refrigerators.

From the question of "What is the price?" to the sales order represents the burying ground of fully ninety per cent of all lost sales.

There is considerable distance between the prospect and the sales order at the time the question of price first appears. The prospect should be guided carefully step by step across this trail. To maintain interest during the journey it is desirable to prepare the prospect against shock and fear. At the outset we may disclose what is expected to be found during the venture. Our reply to the question—"What is the price?"—is, "On the General Electric special budget plan this refrigerator can be purchased on terms that are equal to investing the surprisingly small amount of $1.50 each month—5 cents per day." Let me explain.

Take, for example, the S-62 model. With the new terms, this refrigerator can be purchased on the basis of $10.00 down and the balance payable at the rate of $10.00 per month.

When purchasing out of income, that is, the budget plan, the purchaser invests $10.00 at the time the contract is signed. An additional investment of $10.00 is made each month for the following 32 months.

The only extra expense created by the use of the refrigerator is the cost of electric current necessary to operate it—approximately $2.50 per month. This expense is more than offset by the prospect's present cost of refrigeration. Therefore, the price is $10.00 down and $10.00 per month. Many salesmen terminate their answer to price at this point. That's when the prospect goes into a sinking spell.

Let us understand the difference between price and cost. Price is the amount we are obliged to pay to gain title. In this instance the down payment of $10.00, plus the amount of 32 monthly installments. Cost is price plus expense and less savings over the life of the refrigerator. Price, therefore, is not the amount with which the prospect should be concerned.

Cost is the all-important consideration. Any sales presentation on a basis other than cost disregards one of, if not the greatest benefit of an electric refrigerator—that of its economic justification; it pays for itself.

Food Spoilage

We have now taken one step towards the sales order, but there is still considerable distance to go. After the refrigerator is placed in use in the home, it will eliminate or reduce much of the present household expenses.

The electric refrigerator provides a uniform temperature below fifty degrees. Under such conditions food spoilage is prevented or minimized. All housekeepers have had the experience of opening the old-fashioned ice box to find milk soured, butter rancid, lettuce or celery wilted, or leftovers spoiled.

Such a happening is no reflection on the household management, but due to the inefficiency of the old-styled refrigeration equipment. These losses amount to more than one realizes—but must be reduced to some tangible figure to make the presentation effective.

The government tells us that the annual food bill of the average family amounts to $700.00 a year. The government also estimates the loss due to the lack of proper refrigeration as equal to 10 per cent of the yearly bill, or $70.00 per year. Off hand that seems high. Notwithstanding, many electric refrigerator users claim savings in excess of the losses estimated by the government.

Now, it is clear that the full value of the electric refrigerator is rarely appreciated by the average salesman. That is not hard to understand. The woman of the house has the responsibility of the care and operation of the refrigerator and more fully recognizes its benefits.

With its dry, even cold, the electric refrigerator prevents food spoilage and makes it safe to hold food over several days—long enough so that the family will not recognize Sunday's roast in the form of a meat pie, or the tail end of it in croquettes almost a week later. The prevention of food spoilage is too important a factor to fail to fully capitalize, but we must reduce it to a definite figure if we are to receive the advantage this subject offers.

It seems conservative, and will be admitted by the thousands of users, to estimate this saving at 5 cents per meal. Thus we have a savings of 15 cents per day, or $4.50 each month.

Quantity Purchases

If that were the only saving made possible, the electric refrigerator would not have met with such remarkable public acceptance. A most important saving—one many times overlooked—has not been considered—the saving on quantity purchases.

In almost every community the merchants have special bargain days, at which time food is offered at reduced prices. With an electric refrigerator accommodating and preserving the extra supply at the low even temperature they demand, it is possible and practical to buy the entire week's supply of perishable foods during bargain day, which is the same as the average housekeeper now buys her entire week's supply of groceries.

The saving effected by this method of purchasing can more readily be reduced to a concrete amount. As this is a questionable saving in the minds of some salesmen, let us see an example.

From the Friday issue of one of the newspapers we recently compiled a record of the perishable foods offered at bargain prices for Saturday only. The price of this same food on other days of the week was obtained. Then through the services of the Home Economics Department we had prepared a minimum estimate of the perishable food requirements to supply a family of four for a period of one week.

According to this list you will note the Saturday prices for the perishable food requirements were $5.22, as compared to the prices offered on the same food other days during the week of $7.96, or a saving of 34 per cent.

Here again let us be conservative and use the figure of 20 per cent for this saving. The average family will surely consume $5.00 worth of perishable foods in a week. Then from this source we have a saving of 20 per cent of $5.00, or $1.00 per week, totaling $4.00 for the month.

Two Sources of Economy

We now get some idea of the economy made possible by the use of an electric refrigerator. From the two sources—food spoilage and quantity purchases—the savings amount to a total of $8.50 each month. Now that we have covered the question of savings, we are another step closer to the sales order but still some distance away.

At the start of this journey we stated that this model S-62 General electric refrigerator could be purchased on terms that are equal to investing $1.50 per month.

We can now relate the savings to the price to determine the cost—which, I stated, was the all-important consideration. The monthly investment on the purchase of the refrigerator was $10.00. The savings resulting from its use is shown as $8.50—confirming our statement at the beginning of the journey—it can be purchased on terms that are equal to investing the surprisingly small amount of $1.50 per month, or 5 cents per day.

Refrigerator Earns Money

With this method of presentation we answer the unexpressed thoughts that may be in the mind of the prospect.

"Can't Afford It"—What man or woman can honestly say they can't afford 5 cents per day for 32 months to protect the health of those nearest and dearest to them for many years?

"Will Buy Later"—Where is the economic theorist who can justify saving $1.50 each month at the expense of $8.50 monthly loss? That person is paying for the refrigerator each month without having its benefits. If they defer the purchase for four months they lose $34.00—a loss that is gone forever and cannot be made up later.

"Need Other Things"—Is it conceivable that anything is quite as important to a family as preventing food contamination, which means possible sickness—particularly when such a condition can be prevented for 5 cents a day? Such an insignificant amount could hardly interfere with any other purchase the prospect might have in mind.

In our sales contacts we should not refer to the purchase of an electric refrigerator as an expense. It should be considered as an investment. In other words, an electric refrigerator does not cost money. It earns money. It saves money.

We have made considerable progress in our advance in the direction of the order. It is now within striking distance. The average prospect has money on deposit in the bank or invested in stocks or bonds. The bank pays 4% interest and a return of 6% on securities is considered satisfactory. Let us see what money invested in an electric refrigerator returns in dividends.

To purchase this refrigerator involves an investment of $1.50 per month for 32 months, or a total of $48.00. To this amount we have to add the $10.00 deposit at the time of purchase, which shows a total investment equal to $58.00. This represents the total additional amount of money necessary to own the refrigerator.

After all monthly payments have been liquidated, from this investment of $58.00 the purchaser realizes savings of $8.50 per month, or $102.00 per year—172% income on the amount invested.

Now, such a condition seems incredible even though the result is based on practical facts. Suppose, however, the saving is half or a quarter as great. To say nothing of the time and energy saved and the protection of the family's health, where can you invest money today and get anything like the income to be received from money invested in an electric refrigerator?

When the journey with the prospect is taken this way, the four steps—Price, Savings, Cost and Investment — and using the new terms of $10.00 down and $10.00 per month, the usual result will be that the prospect will be converted into a sale and Old Man Price's fate will be sealed through the signature on the dotted line.

New Coast Dealers Hear Holbrook Officials

Merchandising plans for the Holbrook refrigeration line were recently discussed at a meeting of dealers operating under Pacific Wholesale, Inc., newly appointed distributors, Los Angeles.
Talks were made by Walter M. Fagan and Frank Fagan, president and sales manager, respectively, of the distributing company; L. W. Ward, vice-president and general manager and Gordon Muir, advertising manager, both of Holbrook Merrill & Stetson.

NEW BRITAIN MEN ORGANIZE BUREAU

New Britain, Conn.—Eight New Britain refrigerator dealers have formed an electric refrigeration bureau to promote the cooperative merchandising plan, sponsored nationally by the National Electric Light Association.

A meeting was held recently at the Hotel Burritt, when the dealers were guests of the Connecticut Light & Power Co.

The representatives present included: Louis Croll, Guy K. Spring and C. F. Hayden, of Spring & Buckley (Kelvinator); J. E. Dunlay, of Barry & Bamforth (General Electric); L. D. Morans, Henry Morans & Sons (Majestic); J. Crosson, McCoy's, Inc. (Majestic); W. Iverson, Economy Auto Supply Co. (Ice-O-Matic); G. K. Macauley and Louis Dubowy, Mechanical Utilities, Inc. (Wayne); J. O. Bundy, New Britain Store Fixture Co. (Copeland); and C. A. Duggan and B. H. McElhone, of the Connecticut Light & Power Co., Frigidaire representative.

LINTNER WITH SUTCLIFFE

Cincinnati, Ohio—M. P. Lintner is now sales promotion manager for the Norge refrigerator division of Sutcliffe Co.

The company has been recently appointed Atwater-Kent radio distributor for southern Ohio and parts of Kentucky and Indiana.

BOHN PIONEERED THE PORCELAIN REFRIGERATOR

This is but one of the many advances pioneered by the BOHN engineers during thirty-five years of quality manufacturing.

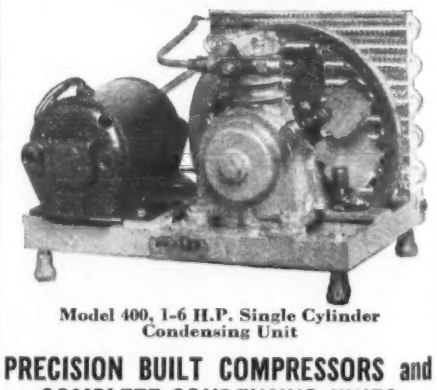
BOHN has built thousands of cabinets for manufacturers of refrigerating machines who desired the utmost in beautiful and scientific construction to best set forth their mechanism.

BOHN would be glad to figure with those organizations who recognize that a quality all-porcelain refrigerator is a distinct merchandising asset.

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Write for details of low prices now prevailing on stock models.

DICELER
ELECTRIC REFRIGERATION
—PRODUCTS—
A SERVICE TO THE REFRIGERATION INDUSTRY



Model 400, 1-6 H.P. Single Cylinder Condensing Unit

PRECISION BUILT COMPRESSORS and COMPLETE CONDENSING UNITS
for Electric Refrigeration Manufacturers, Distributors and Dealers

Our plan allows the assembler to advertise and sell under his own name.
Sizes for 1/6, 1/4 and 1/3 H. P.
Sulphur dioxide and methyl chloride condensing units.
Ideal for domestic refrigerators, ice cream cabinets, water coolers and small commercial installations.
Prices lowest in the history of electric refrigeration.
Full details given on request.

Deissler Machine Company
Greenville, Pa.
Manufacturers of complete domestic and commercial refrigeration systems

ACCESSORIES
BY
Seeger
SAINT PAUL

A presentation of three profitable, fast moving accessories.

The Seeger Fruitray for keeping any seasonable fruit, like oranges, and apples in a solid, wholesome condition. Furnished at a slight additional cost.

The Seeger Vegetable Chiltray for keeping lettuce, celery and other greens in a crisp, snappy condition—retaining original freshness and flavor. Wilted vegetables are revived and made palatable when placed in Vegetable Chiltray for short time. Furnished at slight additional cost.

Legs— either in white porcelain or white genuine lacquer—can be had at slight additional cost, to fit any Cabinet by Seeger. Four various heights: 4 inch, 6 inch, 8 inch and 11 inch.

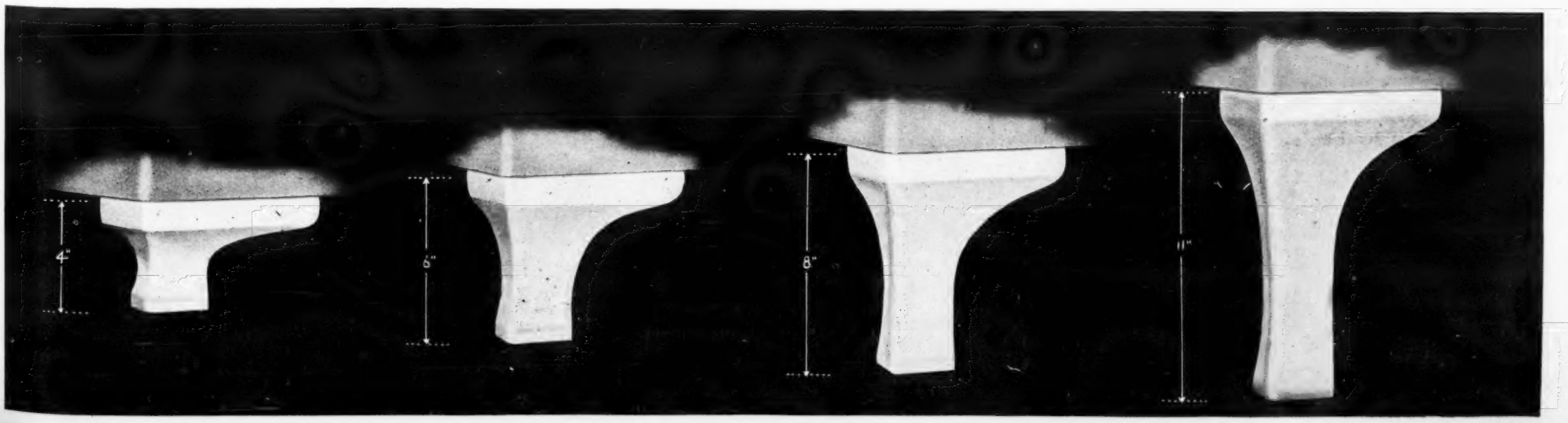
SEEGER REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Madison Ave.,
Between 46th and 47th Sts.
NEW YORK, N. Y.

655-57 So. La Brea Ave.
LOS ANGELES, CAL.

Statler Building
BOSTON, MASS.

228 North LaSalle St.
CHICAGO, ILL.



THE EXPANSION VALVE

Stories of Interesting PEOPLE in the Refrigeration Industry

By **GEORGE F. TAUBENECK**

Cold Cigars

When you buy a Dutch Masters cigar, you (being refrigeration minded) may be struck with the announcement on the box that these cigars have been "cold treated."

There's a story behind that. So far as we know, the story has never been told before; and there's nothing we like better than being the first to bear the tidings from Ghent to Aix.

A few years ago Dutch Masters executives were bothered by two particularly irksome problems. One of these was worms. The other was that familiar old bugaboo, seasonal demand.

One day one of the worried executives uncovered a Columbia professor who was said to be an authority on worms and what to do about them. A council was called, and the professor was hired.

After due deliberations and experiments, the professor emerged from his laboratory with an answer not only to one, but both problems. He suggested refrigeration.

Conclusively the professor proved that proper refrigeration of tobacco leaves and finished cigars would prevent the destructive inroads of worms.

Even more interesting was his claim that cigars could be stored indefinitely under properly regulated temperature and humidity conditions.

Thus cigars could be produced on an even-load schedule, and stored during valleys in the sales curve to wait until peak seasons before delivery into the hands of retailers.

Convinced that hallelujahs were in order, the Dutch Masters executive council equipped a warehouse in Philadelphia with the refrigerating and air conditioning equipment prescribed by the pedagogue, aided by competent engineers.

The scheme worked beautifully. Worms appeared no more.

And the seasonal production problem was licked so thoroughly that several factories, which had been working on an off-and-on schedule, were eliminated entirely.

For a year and a half this plan was in quiet, unheralded operation. Then another advertising agency, Young & Rubicam, obtained the Dutch Masters account.

Looking for "bear oil" in the manufacture of Dutch Masters cigars, Young & Rubicam investigators found this refrigeration process, and seized upon it immediately.

("Bear oil" is an agency term for some thing unusual about the making of a product, or some novel use, which may strike the public fancy. Thus, the "halitosis" appeal in Listerine copy is "bear oil," as is "violet ray treatment" in Lucky Strike advertising.)

At first the agency found the customary objection on the part of those in authority against any publicity on production methods.

"We've got a good idea," argued the Dutch Masters officials, "and we don't want to give it away to our competitors."

But the persuasion of the Young & Rubicam account executive finally won out, and today "cold treatment" is being extensively advertised in connection with Dutch Masters cigars.

And thus endeth the tale.

* * *

Cockrell, Brack

Air-conditioning apparatus of some form or another has been employed by cigar plants for many years, although the particular application made by the General Cigar Co. for preserving Dutch Masters cigars is unique in the field. A 100-ton capacity Carrier refrigeration unit has been in use in the Bayuk factory in Philadelphia for five years.

Incidentally, F. M. Cockrell, publisher of ELECTRIC REFRIGERATION NEWS, has discovered that cigars can be kept in good condition in a household electric refrigerator almost indefinitely.

Not using cigars himself (but you should see how he consumes Old Golds!) he keeps them on hand for his guests. The Valve has smoked one of these home-refrigerated cigars which arrived at the Cockrell home on Christmas, 1928, and pronounced it good.

So, too, has the erudite Fred Brack, advertising manager of this sheet, and a man of discerning taste.

* * *

Howard Blood

In 1923 an executive triumvirate gained managerial control of the Detroit Gear & Machine Co. at a time when this concern was perplexed by economic changes in the automotive supply situation.

The triumvirate rode through the perplexities in Rooseveltian fashion, and was able to accumulate considerable "fat" for the company. This "fat," the triumvirate decided, should be turned into research.

Out of this appropriation for research came several ideas. One was "free wheeling." Another was the Norge rotary compressor.

Howard E. Blood, president and general manager, J. H. Knapp, vice president and director of sales, and C. D. Donovan, secretary and treasurer, comprise the triumvirate.

They are still in charge of the Detroit Gear & Machine Co. They are also the helmsmen for the Norge Corp. Both concerns have been absorbed by the Borg-Warner interests, but Blood and his associates are in complete control of their two companies.

One of the electric refrigeration industry's most inaccessible men is Major Blood. He believes in the old policy of saying nothing and sawing wood, and makes himself as inconspicuous as possible.

In his own organization he is almost a legendary figure—as quiet, remote Doers often become.

* * *

The Mayflower

In Dayton, Ohio, is a small group of men who have been building a business out of profits.

Beginning in a very small way with a chief engineer who had gained experience with Frigidaire, and a president taken from the National Cash Register Co., a nucleus of men began making Trupar electric refrigerators—as a sideline to a few other products not exactly in the specialty selling line.

Today that same nucleus is still in charge. These men have been able to build a business without going outside for financial aid, and are today congratulating themselves on the results of their working and thinking.

For a long time the name, "Trupar," bothered them. Finally they found another which seemed a dandy—the "Mayflower." Almost any housewife who has attended an American public school will have an "approach response" to the name "Mayflower."

It connotes aristocracy, lineage, social position. It has both sentimental and patriotic appeal. And the men at Trupar thought it should be a good name for an electric refrigerator.

Beginning with just one model bearing that name, it was gradually extended to the entire line.

* * *

Hunt, Meyers, Geiler

H. J. Hunt, Trupar president, is a tall, trim man with silvered hair. His disposition is at once affable and reserved, his bearing both distinguished and accommodating.

Once upon a time, so the story goes, he had the distinction of firing C. T. Mutchner, Frigidaire publicity chief, from a 12-dollars-a-week job with the National Cash Register Co.

W. M. Myers, of the Trupar organization, is perhaps the only man in captivity who has been both treasurer and advertising manager of one concern.

Ordinarily these two offices are scarcely on speaking terms in substantial manufacturing concerns, but Myers has combined the two disaffinitive duties happily and apparently without mental conflict.

Another member of the Trupar executive group, F. C. Geiler, chief engineer, claims that he is a regular reader of our "kolyums" (pardon our chest expansion).

The story we told about the Butler, Indiana, Majestic dealer and his lackadaisical selling talk reminded Geiler of another dealer he once met, who expounded at great length on the value of the thermostat—which, he said, no other machine on the market had. His refrigerator also had a unique type of insulation, "Dry Zerozone."

* * *

Louis F. Thompson

Three young men have had important roles in the drama of low temperature case development which has been unfolding in the last year.

One is the young engineer who has been making tests on low temperature equipment in the Batchelder, Snyder, Dorr & Doe laboratory in Boston. The second is another young man who has been on the same type of job for Swift & Co.

Still another young man who has been making important decisions on low temperature equipment is Louis F. Thompson, of the Indianapolis Abattoir Co.

Not only has he been directing tests on equipment to handle Sally Lee Frigid Meats, but he has also been in charge of the merchandising of these quick-frozen products. In the Refrigerated Food section of this issue is a story of his recent activities.

He is an alert, quick-moving, quick-speaking, quick-thinking man who is devoting all his energies to quick-freezing activities.

* * *

Broken Leg

Contributor T. L. Chryst, of the Frigidaire Corp. in Dayton, tells us a good story about Salesman E. F. Hayden, of Chicago, who was nursing a broken leg last month.

After resting somewhat uneasily in bed for awhile, Hayden grew tired of watching the snow, borne down by a March blizzard, beat against his window-pane.

Procuring a pair of crutches, a warm muffler, and a handful of literature on the new Frigidaire "white line," Hayden plowed through the 15 inches of snow which was piled up on Chicago sidewalks, and began ringing doorbells.

In one day he closed orders for six household and three apartment house jobs.

(When complaints were brought to Abraham Lincoln that Gen. U. S. Grant drank, he is said to have retorted: "Find out what brand of whiskey he drinks, and I'll order a barrel of it sent to each of my other generals." The Valve does not advocate, however, that sales managers order each of their salesmen to break a leg before calling on prospects.)

* * *

E. R. Wurgler

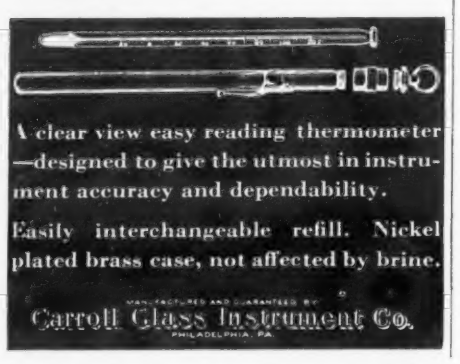
A man with a great many worries is Edward R. Wurgler. As sales manager of the refrigeration division of Holcomb & Hoke, Indianapolis, he has seven regional managers, 50 district managers, and a bounteous supply of salesmen to direct.

And some salesmen, he will tell you, can be as temperamental and as unpredictable as prima donnas.

He has one prize order-getter who simply can't hang on to money. After a whirlwind selling effort he goes on a whirlwind spending spree, and then wires Wurgler for big advances on his next commission check.

If the advances are not forthcoming, he pulls himself together, calls on some customers, and comes back with a stack of orders. Whereupon another spree begins, followed by another flat purse.

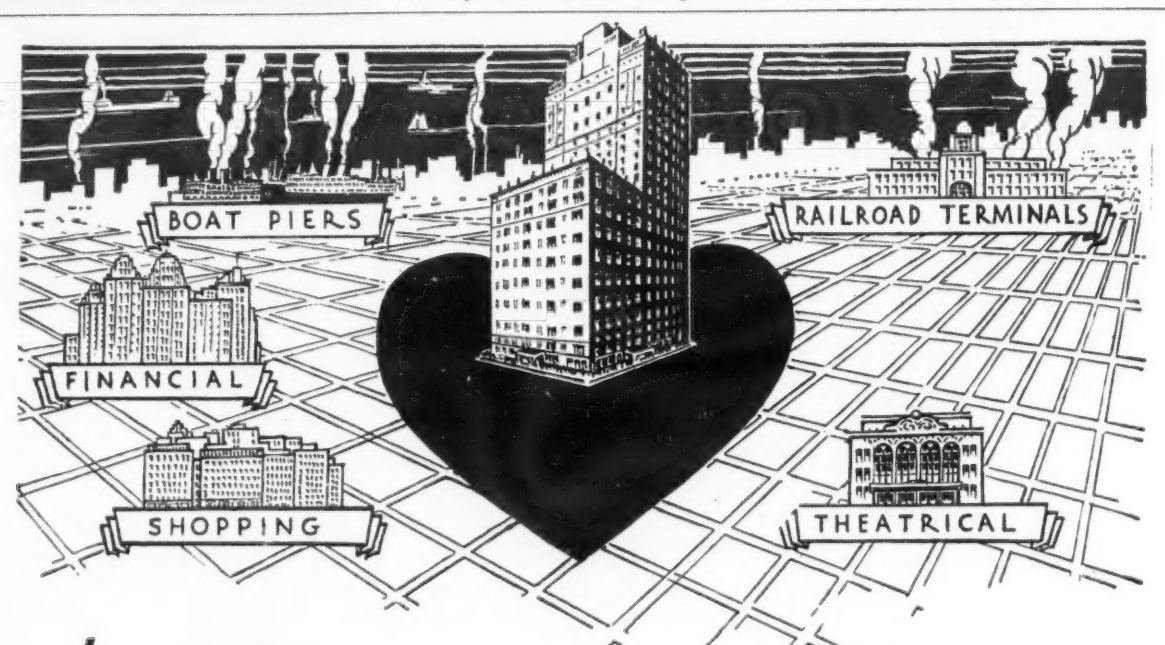
And the salesman's wife, Wurgler maintains, is just like her husband.



A clear view easy reading thermometer—designed to give the utmost in instrument accuracy and dependability.

Easily interchangeable refill. Nickel plated brass case, not affected by brine.

MANUFACTURED AND GUARANTEED BY
Carroll Glass Instrument Co.
PHILADELPHIA, PA.



In the

HEART *of* DETROIT

HOTEL FORT SHELBY is located in the center of "downtown" Detroit. It is just around the corner from the Union Station, serving the Pere Marquette, the Wabash, the Pennsylvania and Baltimore and Ohio Railroads. No other large Detroit hotel is so near the Michigan Central Terminal, the principal airports, or steamship piers. ¶ The shopping, theatre, financial, insurance and wholesale districts are practically at its door. Hotel Fort Shelby is known the world over for its luxurious, commodious rooms . . . its inviting lobby . . . its tempting, delicious food . . . its attractive rates and informal hospitality. ¶ 900 units . . . all equipped with servidor and private bath. Rooms as low as $3.00 . . . suites $10.00 and upwards.

Motorists are relieved of their automobiles at the door without service charge. Write for free road map, and your copy of "Aglow with Friendliness," our unique and fascinating magazine.

HOTEL Fort Shelby

"AGLOW WITH FRIENDLINESS"

E. J. BRADWELL, *Manager*

DETROIT

WE BUY

New and Used **ELECTRIC REFRIGERATORS**

In Any Condition

Phone, Write or Wire All Details, Type of Motor, Size of Box, Etc.

KASKEY & QUINN, Inc.

525 Arch Street Philadelphia, Pa.

Harrison Men Hear Gibbons, Manning

When Phillip H. Harrison (left) assembled his General Electric refrigerator dealers at Newark, N. J., for a recent sales conference, he had as guest speakers, L. A. Hawkins, (left) executive engineer, General Electric research laboratores, and Floyd Gibbons, famous war correspondent.

SPRINGFIELD DEALERS STEP UP SALES QUOTAS

By Mrs. Mabel B. Pulliam

Springfield, Ill.—Increased quotas for this year have been set by dealers and distributors of electric refrigerators in this city.

James & Co., General Electric distributor, operates a retail store at 512 South Fifth St., under the management of Charles Love.

Mr. Love estimates there are 600 users of General Electric refrigerators in the city of Springfield. The quota for 1931 is set at 250 units.

The J. A. Van Natten Hardware Co. was the distributor for Frigidaire until a short time ago, when the Illinois Power Co. took over the distribution. The J. A. Van Natten Hardware Co. will continue to operate as a Frigidaire dealer. The Illinois Power Co. has fixed its 1931 quota at 200 household units.

Early this year the Illinois Power Co. added the Electrolux line, which was formerly handled by the Capitol City Paper Co.

The Springfield Kelvinator Sales Co., with H. T. Richards in charge of sales, has its headquarters at 305 South Fourth St. Mr. Richards reports that 158 sales were made in 1930. He estimates that there are about 500 Kelvinator users in the city.

The Schlitt Hardware Co., 422 East Adams St., also handles Kelvinators.

The Norge electric refrigerator is sold by the Haas Electric Manufacturing Co., 305 East Monroe St. Last year this company sold 60 Norge refrigerators, and its 1931 quota calls for 150 units.

Early in the year the Haas company added the Majestic refrigerator, with the 1931 quota set as 100 Majestic units.

A. Dirksen & Son, Fourth and Washington Sts., distributor for the Copeland, reported 177 Copeland sales for last year.

The Capitol City Paper Co., Fourth and Madison Sts., is wholesaler for the Servel refrigerator for the entire state of Illinois, with the exception of the extreme northern portion.

The Servel quota for the state has been placed at 1,650 units. Last year the company sold 400 units, 200 of which were installed in the city of Springfield.

NORGE DEALERS FROM FOUR STATES HOLD SESSION

Springfield, Mass.—An all-day meeting of Norge dealers in western Massachusetts, western Connecticut, southern Vermont and eastern New York was held here March 24 by the B. H. Spinney Co., Norge distributor.

M. G. O'Harra, in charge of the Norge New York office, spoke on "Merchandising Refrigeration."

The servicing of the product was described by Paul Kunkle, service engineer of Norge. H. W. Terry talked on the advertising program.

Copeland Takes Out Employes Insurance

Mt. Clemens, Mich.—A group life insurance policy in excess of $1,000,000 has been taken out by Copeland Products, Inc., it was announced recently by W. D. McElhinny, vice-president in charge of sales.

"Under this plan employes and the company share in the cost and all employes who participate in the plan are eligible for amounts of insurance in accordance with their duties," Mr. McElhinny stated.

"The plan also provides for double indemnity in case of accidental death, and other payments in case of certain specified injuries. The policy also includes employes of Copeland subsidiaries in Detroit, Chicago and New York."

SCHLEUSSNER, PIONEER IN CHEMICAL INDUSTRY, DIES

Stamford, Conn.—Philip O. Schleussner, first vice-president of the Roessler & Hasslacher Chemical Co., Inc., of New York City, and an active figure in the drug and chemical industry for over 25 years, died recently at his home here.

Joining the company in 1906, Mr. Schleussner took charge of the Platinum Division and worked himself up to the position of manager of sales for all of the company's products.

In 1923 he was made director and elected secretary, and in 1928 he became first vice-president.

Along with these activities, Mr. Schleussner was an official and director of other associated companies of Roessler & Hasslacher.

H. A. DELASHMUTT JOINS CURTIS PUBLISHING CO.

Philadelphia—Harry A. Delashmutt, formerly advertising manager and for the last two years eastern representative of ELECTRIC REFRIGERATION NEWS, has joined the staff of the Curtis Publishing Co. as advertising representative for *The Country Gentleman.*

TRUPAR DISTRIBUTOR OPENS NEW QUARTERS

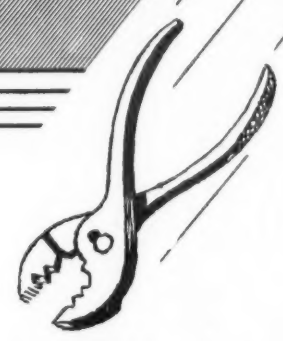
Manitowoc, Wis.—The A. H. Dummer Co., local plumbing and heating contractor and distributor for the Mayflower electric refrigerator, has opened new showrooms in the downtown section of this city. Howard Dummer is in charge of the new showroom.

G. B. REED TO HEAD SALES OF DETROIT FORGING CO.

Detroit—George B. Reed has been recently appointed sales manager of the Detroit Forging Co. He succeeds A. L. Rose, who resigned.

Simplified Refrigeration

THROW AWAY YOUR WRENCHES AND PLIERS!



AT last the old-fashioned Service Department is doomed! No longer will costly Service calls eat up your profits. For now you can sell electric refrigeration entirely as a merchant — free from the heavy overhead charges that have always handicapped dealers in the past.

The new Servel Hermetic definitely puts an end to kitchen repairs, intricate adjustments and replacement of parts.

The highly simplified working unit is hermetically sealed while under ten ton pressure—locked in a permanent bath of oil.

All parts most likely to cause future trouble have been discarded entirely. No fans, belts or pulleys—no float valves or expansion valves—no fuses or stuffing box seals.

If repairs should eventually be necessary you simply replace the unit (a simple, one-man job requiring no tools or equipment except a screw driver) and return it to Evansville for quick and expert repairs.

Your customers promptly appreciate the numerous advantages of Simplified Refrigeration. Already a vigorous wave of enthusiasm is bringing faster sales, easier sales to Servel dealers. And the low prices of the Servel Hermetic are comfortably within reach of every family—give you a tremendous market limited only by the number of wired homes in your community.

A complete range of sizes, nationally advertised to millions of families through striking full color pages in the Saturday Evening Post—a complete list of powerful and effective selling points—a complete factory guarantee that protects both dealer and customer alike.

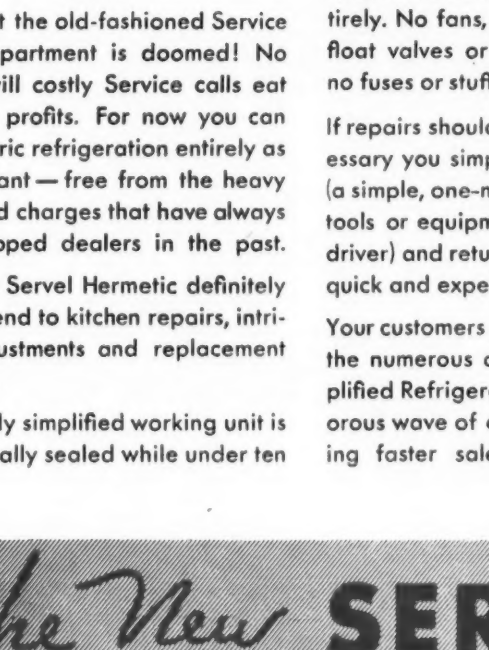
Write for our attractive Dealer Plan.

SERVEL SALES, INC.
EVANSVILLE, INDIANA

A COMPLETE LINE OF DOMESTIC AND COMMERCIAL REFRIGERATION

The New SERVEL Hermetic

SIMPLEST ELECTRIC REFRIGERATOR EVER PRODUCED



★

HERMETICALLY SEALED UNIT
NO KITCHEN REPAIRS
NO INTRICATE ADJUSTMENTS
NO REPLACEMENT OF PARTS
FEWER MOVING PARTS
NO MOVING PARTS EXPOSED
COSTS LESS TO OPERATE
QUIETEST ELECTRIC REFRIGERATOR
HANDY TEMPERATURE CONTROL
MORE USABLE SHELF SPACE
BEAUTIFUL, GRACEFUL CABINETS
FLAT, USABLE TOP
NO INSTALLATION PROBLEM

★

Write for details of our attractive dealer plan

The next advertisement in the beautiful Servel consumer series appears in the April 18th Saturday Evening Post — Watch for it!

EXPORT INFORMATION ON SWITZERLAND

Demand for Household Electric Refrigerators Shows Increase

By H. Merle Cochran
American Consul, Basel, Switzerland

ON account of the low temperature prevailing in this section throughout the greater portion of the year (the average temperature during the summer months for the past ten years has varied from 63 to 67 degrees Fahrenheit), there has not been a great demand in the past for refrigerators, and their use was confined chiefly to hotels, restaurants, cafés, butcher shops, and other places requiring the preservation of large quantities of food products or beverages.

However, since the recent introduction of electric refrigerators for home use, an important demand has arisen for such equipment; and the abundant supply and wide distribution of electricity throughout Switzerland will undoubtedly encourage the future use of electrical refrigerators.

During the past two years electric refrigerators have been extensively advertised in Basel and several different makes have been offered for sale by local dealers.

Sources of Supply and Prices

Swiss manufacturers are supplying a large part of the domestic demand for electric refrigerators. The Swiss makers are improving their products to keep up with the latest developments, and in many instances are quoting lower prices than those charged for refrigerators imported from the United States or other countries.

Nevertheless, there seems to be an opportunity here for the sale of American made electric refrigerators. In fact, two American makes have already met with considerable success in this territory. Swedish and German makes are also being sold.

The local retail price for the smallest model of one American make now on sale in Basel is Frs. 1,580 ($305). Larger models for home use are priced at Frs 1,950 ($376), Frs. 2,250 ($434), and Frs. 2,950 ($575).

A German refrigerator, operated with a compressor, sells in its smallest model (about 5 cu. ft. capacity) for Frs. 1,380 $266). Two larger models of this make, known as the "Ate," are priced at Frs. 2,150 ($415) and Frs. 2,750 ($531).

There are four or five Swiss firms manufacturing electric refrigerators. One of the most popular is the "Autofrigor," manufactured by the Maschinenfabrik Escher, Wyss & Co., of Zurich. The smallest models made by this firm are priced retail at around Frs. 1,450 ($280).

Recently, a new type of refrigerator was offered by a Swiss manufacturer, the "Carba" S. A., of Berne. This refrigerator is designed for the use of solidified carbon dioxide, and numerous advantages are claimed compared with either electric or ice refrigeration, namely: greater economy, lower temperature, no odor or noise, greater cleanliness, et cetera.

Blocks of the solidified carbon dioxide are furnished by the "Carba" S. A., and it is claimed that such blocks evaporate directly into a gaseous form, leaving no liquid or dampness, and that the loss by evaporation does not exceed 5 per cent in 24 hours.

A block large enough to last a week in a small refrigerator costs about Frs. 5 ($0.97) delivered, or about Frs. 0.71 ($0.14) a day. Prices of small household refrigerators made by this firm range from Frs. 375 ($72) to Frs. 550 ($106) retail.

Refrigeration Dealers

1. Audiffren Singruen. Kaelte-Maschinen Aktiengesellschaft, 27 St. Johannvorstadt, Basel, Switzerland. Manufacturers of refrigerators and ice plants; also dealers in refrigerators. Established 1913. Capital Frs. 1,500,000. Volume of business undetermined. Employees 35. Size, large. Reputation, excellent.

2. Hans Eisinger, 24-28 Aeschenvorstadt, Basel, Switzerland. Retail dealers in sanitary, cooking, refrigerating and laundry installations, plumber. Established 1870. Annual turnover Frs. 1,500,000. Employees 100. Traveling salesmen 2. Size, large. Reputation, excellent.

3. G. Kiefer & Co., 14 Gerbergasse, Basel, Switzerland. Dealers in refrigerators, household and restaurant kitchen utensils and installations. Established 1856, incorporated 1921. Capital Frs. 500,000. Annual turnover (all departments) Frs. 6,000,000. Employees 100. Traveling salesmen 8. Size, very large. Reputation, excellent.

4. Hans Schneeberger & Co., A. G., 16 Gerbergasse, Basel, Switzerland. Retail dealers in household, restaurant and hotel utensils and equipment, refrigerators, etc. Established 1853, incorporated 1920. Capital Frs. 120,000. Annual turnover Frs. 2,000,000. Traveling salesmen 4. Employees 50. Size, large. Reputation, excellent.

5. Fritz Blaser & Co., 24 Schneidergasse, Basel, Switzerland. Retail dealers in household, restaurant and hotel kitchen utensils and equipment. Capital Frs. 500,000. Annual turnover Frs. 1,500,000. Traveling salesmen 3. Employees 20. Size, large. Reputation, excellent.

The firm first mentioned in the above list of dealers in refrigerators is a Basel concern engaged in the manufacture of large refrigerating plants for restaurants, butcher shops, hotels, et cetera.

It has informed the Consulate that it has not found it desirable to manufacture small household refrigerators in competition with those already on the market, and would be interested in obtaining the sales representation in Switzerland for a line of small electric refrigerators of American or other make.

The list also gives the names of other wholesale or retail firms of this district which might be interested in refrigerators.

Sales Methods

While French, German, and other European concerns are able, because of their proximity, to cover Switzerland through traveling salesmen sent out directly from the factory or head-establishment, many American exporters have found by experience that the best method for doing business in Switzerland is through one exclusive agent for the whole of the country.

Large wholesale distributing houses having traveling salesmen, located in Basel, Zurich, Geneva, or some other important Swiss city, are often found to be most suitable for the handling of such an agency.

As a rule, exclusive agents in Switzerland are authorized to appoint subagents as conditions may warrant.

Electric refrigerators from the United States now on sale here are being distributed through concerns that have been granted exclusive sales representation for the whole of the country.

Quotations and Credit Terms

Antwerp is the most convenient port for this part of Switzerland for shipments from the United States, and importers in this district usually prefer quotations for American goods c. i. f. Antwerp.

Exchange values are well understood and there is therefore no objection to quotations in American currency. Weights and measures, however, in making quotations, should be expressed in the metric system.

Most European firms quote prices to Swiss importers f. o. b. factory or point of shipment, but German concerns occasionally quote prices c. i. f. Swiss frontier, duty to be paid by the consignee.

European firms customarily grant open book credit to reliable Swiss importers, the terms calling for payment on a net basis within from 30 to 90 days after date of invoice, with a discount of 2 or 2½ per cent usually allowed for cash payment.

Local importers are often reluctant to do business with American houses on terms of cash against documents or other terms which require payment previous to inspection of the merchandise.

Some American exporters have found it possible to grant credit to their customers in this territory, once business has become established, by permitting documents to be delivered upon the acceptance by the consignee of a 30 to 90 day sight draft, and this method enables the importer to inspect the merchandise before making payment and makes the terms of credit approximately the same as those granted by European firms.

Customs Duties

Refrigerators are classified for customs purposes under the Swiss tariff as follows: The wooden cabinet lined with iron or other materials is assessed for duty under paragraph 784b at the rate of Frs. 40 per 100 kilograms ($3.51 per 100 lbs.).

In the case of electric refrigerators, the motor, compressor or refrigerating element is assessed for duty under paragraph 898b at the rate of Frs. 35 per 100 kilograms ($3.07 per 100 lbs.).

Swiss duties are levied upon the gross weight of articles imported, including all packing material, but a minimum tare is provided for each kind of merchandise, and if the actual packing does not equal the minimum tare, the latter may be added to the net weight as a basis for assessing duties.

For articles classified under paragraph 784b of the tariff, the minimum tare is 20 per cent, and for articles classified under paragraph 898b, the minimum tare is 10 per cent of the net weight.

General Information

The consular district of Basel comprises the Cantons of Basel-City, Baselland and Solothurn, and the chief cities of the district are: Basel, Solothurn, Olten, Grenchen and Liestal.

Area, Climate and Topography

There are approximately 483 square miles in the district. The climate is mild and somewhat humid in the spring and winter months, with no extremes of heat and cold. The region is one of undulating hills and valleys, and about one-third of the district lies in the Jura mountains.

Population, Race and Language

The population of the district is approximately 400,000, of which Basel-City has a population of 160,000. The inhabitants are largely of Germanic stock. Wages are perhaps higher than in any other European country, and a high standard of living prevails. Wealth is more or less evenly distributed, and on a per capita basis is probably slightly more than in the United States.

The language in common use is German, although French is widely known, and some of the larger firms are capable of conducting their correspondence in English. It has been noted, however, that foreign firms are usually more favorably impressed if correspondence with them is conducted in their own language.

Advertising matter for use in this section should be printed in German or French, preferably in both languages, as it can then be used throughout Switzerland, and in some of the other European countries.

Postal Rates

The letter postage rate from the United States to Switzerland is 5 cents for the first ounce and 3 cents for each additional ounce or fraction. Post cards 3 cents each. Printed matter, including newspapers, 1 cent for each 2 ounces or fraction. Samples of merchandise, 2 cents for the first 4 ounces or less, and 1 cent for each additional 2 ounces or fraction. Registered matter, 15 cents plus the ordinary postage. It is important that the sender prepay the full amount of postage. Otherwise the addressee must pay a penalty of double the amount of unpaid postage, which usually creates an unfavorable impression.

General Customs Policy

Switzerland accords no preferential treatment in levying customs duties. The tariff policy is one of protection of home industries, and import duties on manufactured articles are relatively high. Duty is levied according to fixed schedules, based on the gross weight of the article taxed. The packing of goods imported into Switzerland should therefore be as light as possible, consistent with safe shipment.

Leading Industries

The consular district of Basel is largely industrial. The principal industries are the manufacture of aniline dyes, chemicals, pharmaceutical products, watches, silk ribbons, spun silk, shoes, magnetos, automatic time switches, and machinery. One of the largest shoe factories in Europe is located at Schoenenwerd, in the Canton of Solothurn, and about 12 per cent of the aniline dyes of the world are produced by four large chemical firms in Basel. On May 20, 1930, the Bank for International Settlements was opened at Basel.

Imports and Exports

The principal imports are motor cars, motor tires, petroleum products, rubber goods, typewriters, cash registers, adding machines, cotton, tobacco, and lard, chiefly from the United States; wheat and other cereals from Canada, the United States and Argentina; coal from France and Germany; hides and leather from Germany, Italy, the United States and Argentina; wool from Australia and Argentina; and foodstuffs from various countries. About 40 per cent of the total customs receipts are collected in the Basel district.

The leading exports are aniline dyes, chemicals, machinery, magnetos, pharmaceuticals, shoes, silk ribbons, spun silk, watches, and watch movements. The countries of destination are Germany, France, the United States, Great Britain, Italy and others.

Transportation Facilities

Basel is one of the most important railway centers of Europe, and has excellent rail connections with the whole of Western Europe. The local and transit freight traffic handled at the Basel railway stations amounts to approximately 13,000,000 metric tons annually, while the receipts from passenger traffic are the second largest in the country.

The Rhine is navigable from Rotterdam to Basel, and the river traffic is steadily increasing in importance, especially for the transportation of coal, wheat, gasoline, and all products that are non-perishable and of considerable bulk and weight. The freight handled at the Basel Rhine harbor amounts to about 1,000,000 metric tons annually.

The principal seaports for this district are Antwerp, Hamburg, Bremen, Le Havre, and Marseille. The freight rate from Antwerp to Basel is approximately Swiss Frs. 6 per 100 kilograms.

The aeroplane lines entering Basel give direct connections with Paris, London, Berlin, Stuttgart, Frankfort, Zurich, Lausanne, Geneva, Berne, La Chaux-de-Fonds, Brussels, Amsterdam, Rotterdam, Lyon, Marseille, and Barcelona.

Terms of Credit

European firms usually grant open book credit to reliable Basel importers, the terms calling for payment on a net basis within 30 to 90 days after date of invoice, with a discount 2 or 2½ per cent for cash payment. On first orders Basel dealers are somewhat reluctant to do business on terms which require payment previous to inspection of the merchandise, but this objection is largely removed as soon as business relations have been established and the quality of the merchandise has been found satisfactory.

Kelvinator in Paris

Kelvinator Yukon models made their debut at the Annual Household Show held at the Grand Palace, Paris, Jan. 29-Feb. 15. La Community, Kelvinator representative, had more than a dozen models on display.

PUEBLA RESIDENTS SEE DEMONSTRATION

Puebla City, Mex.—The comfort and advantages of modern household appliances were emphasized in a demonstration staged here recently by the Mexican General Electric Co. and the Puebla Street Car, Light & Power Co.

F. W. Poyntz, commercial manager of the local company, had charge of the demonstration.

The affair was staged in the town's biggest motion picture house, Teatro Guerrero. The lobby was effectively arranged with domestic electric refrigerators, and tables upon which were electric coffee percolators, tea and cocoa pots, irons, etc.

Demonstrations were directed by Jose Luis Diaz, of the Puebla company. Electrically prepared coffee, tea and cocoa were served to all who viewed the demonstration.

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DISPLAY
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REFRIGERATOR SALES

Our Display Foods are carefully designed to demonstrate capacity and usefulness, clearly.

Realistic Display Foods will not melt, soften, and are non-peeling, non-fading, washable and chemically hardened.

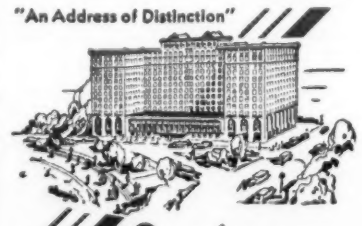
A COMPLETE UNIT DISPLAY OF
27 PIECES PLUS
8 FREE ITEMS
$20.00 F. O. B. Factory

FOR THE SMALLER REFRIGERATOR
18 pieces plus 7 Free Items
$15.00 F. O. B. Factory

NOTE: Free items consist of qt. milk, ½ pt. cream, beverage, mayonnaise, can milk, butter, egg and cheese cartons, etc.

Realistic Displays, Inc.
Factory and Offices
266 Fabyan Pl. Newark, N. J.

"An Address of Distinction"



One of the World's Great Hotels

OUTSTANDING not only among the hotels of Chicago ... but among all the hotels of the World. Costs compare favorably with other establishments where distinguished standards of service prevail. *Rates begin at $5 per day. Permanent Suites at Special Discounts.*

THE DRAKE HOTEL, CHICAGO
Under Blackstone Management

REFRIGERATION EXPORT SHIPMENTS FOR 1930

Combined Domestic, Commercial Business Totals $10,695,633

By John Drittler

EXPORT shipments of domestic and commercial refrigerators to more than 100 foreign lands and three possessions of the United States, Hawaii, Philippine Islands and Porto Rico, reported by the U. S. Bureau of Foreign and Domestic Commerce, despite adverse economical conditions, reached a total of $10,695,633 during 1930, a decline of only 11.1 per cent as compared with the peak business for the previous year.

Volume of refrigeration business was off $1,335,907 against the 1929 period, and Australia, which was one of the best refrigeration customers of this country up until the passage of a high tariff last summer, accounted for $704,453 of the decrease as 1930 orders amounted to $217,772, while 1929 business touched the $922,225 mark.

Domestic refrigerator shipments, including Hawaii and Porto Rico, during last year, totaled in value to $8,579,888, as compared with orders approximating $10,209,619 in 1929, a falling off of 15.8 per cent.

Taking the opposite course, imports of commercial refrigeration in the foreign field during 1930 jumped slightly more than 16 per cent over the previous year. Shipments of commercial units, up to one ton capacity, aggregated $2,115,745 as compared with $1,821,921 for 1929.

Close to 70,000 domestic and commercial units were shipped last year by American manufacturers to the foreign field. The domestic orders greatly outdistanced those for commercial equipment, the former totalling 58,621 units and the latter 11,125 units, with a combined total of 69,746. Combined shipments in 1929 amounted to 73,134 units.

Canada continued in 1930 to be the best refrigeration customer of American manufacturers, dealers and distributors in the provinces purchasing equipment valued at $1,893,222.

Business with Canadian companies decreased $532,029, as orders at $2,425,251 were placed during 1929. Commercial business in the Dominion was nearly doubled last year, as units approximating $648,547 crossed the border, while in 1929 shipments reached a value of $376,345.

The United Kingdom ranked second and was a $1,000,000 refrigeration customer of this country last year. Orders placed by British companies ran ahead of the 1929 period and as a result shipments showed a gain of $55,777. The total in 1930 was $1,077,668 for both domestic and commercial units, compared with $1,021,891 for the previous year.

Australia, by virtue of its high tariff, which went into effect at the height of the refrigeration business in 1930, lost its position as one of the best customers for the refrigeration commodity.

Ranking as the third largest buyer of American-made refrigeration in 1930 was Belgium, which imported 5,051 domestic and commercial units, valued at $804,383. Refrigeration imports from the U. S. in this country were more than doubled last year, as in 1929 only $338,079 worth of equipment was shipped from this country to Belgian firms. Both domestic and commercial units showed big increases in 1930.

British India, France, and the Union of South Africa were all $400,000 customers of this country last year. British India ordered domestic and commercial units valued at $444,799; France, $475,150; and the Union of South Africa, $427,422. In British India gains in imports were reported over the year 1929, while in the other two countries orders were off slightly.

Exports to Germany declined sharply, as the 1930 business in both domestic and commercial equipment totaled $387,414, against $1,040,056 for the previous year. Commercial refrigeration imports from the U. S. ran $4,568 ahead of the 1929 figure.

Leading the South countries as the largest buyers of American refrigeration equipment were Argentina and Brazil. The former purchased domestic and commercial equipment amounting to $439,776 in 1930, while orders by the latter reached $253,174.

Both Japan and China were large buyers, their combined total for domestic and commercial units approximating $346,441. China's share of this 1930 business was $188,235, a gain of $77,305 over the previous year. Likewise, Japan reported imports about $20,000 over the 1929 period.

Hawaii refrigeration imports of both domestic and commercial equipment in 1930 ran $1,479 ahead of the 1929 figure. The combined total was $272,601. Offsetting the slight decline here in household refrigerator exports in 1930 was a slight gain in commercial shipments.

Of the 108 countries buying equipment from U. S. manufacturers, Italian Africa was the smallest purchaser, one domestic unit valued at $95 being ordered in 1930.

The average export price of the 58,621 domestic units, totaling in valuation at $8,579,888, was about $148 per unit. The average price of the 11,125 commercial units, valued at $2,115,745, was about $190 per unit.

Thirty-two thermodynamic refrigerators, valued at $4,563, were shipped to five foreign centers last year. Argentina firms purchased 14 of these units for $1,266, and Philippine Island dealers imported 10 units for $1,873.

Foreign territories which did not import refrigeration equipment from the States in 1930 were: Bulgaria, Estonia, Latvia, Lithuania, Malta, Gozo and Cyprus; Greenland; Miquelon and St. Pierre Island; Falkland Islands; Iraq; Persia; Soviet Russia in Asia; French Oceania; Ethiopia and Italian Africa. No shipments were reported to the territory of Alaska.

Complete 1930 export shipments of both domestic and commercial refrigeration equipment to foreign points reported by the U. S. Bureau of Foreign and Domestic Commerce are shown in tabulated form on this page.

Refrigeration Exports—1930

Country	Electric Household Refrigerators Number	Value	Electric Commercial Refrigerators up to 1 ton Number	Value
Austria	347	$ 52,980	17	$ 5,050
Azores and Madeira Islands	2	500	.....	.....
Belgium	4,572	694,634	479	109,749
Czechoslovakia	246	22,570	1	527
Denmark	511	74,584	161	35,989
Finland	155	22,247	11	1,198
France	2,824	395,010	536	80,140
Germany	2,515	350,018	197	37,396
Gibraltar	14	5,862	.....	.....
Greece	47	5,781	4	298
Hungary	37	5,155	.....	.....
Iceland	11	1,193	.....	.....
Irish Free State	197	23,784	32	3,349
Italy	804	122,180	126	21,618
Netherlands	551	69,880	146	25,747
Norway	204	31,515	7	622
Poland and Danzig	49	6,728	1	274
Portugal	85	17,198	34	9,084
Rumania	130	19,829	4	1,265
Soviet Russia in Europe	16	3,873	14	3,243
Spain	753	161,111	83	25,617
Sweden	1,081	130,006	19	2,898
Switzerland	1,283	192,500	356	50,252
United Kingdom	6,086	849,567	1,702	228,101
Yugoslavia and Albania	8	1,880	25	4,931
Canada	10,208	1,244,675	3,542	648,547
British Honduras	9	1,527	.....	.....
Costa Rica	29	6,351	1	531
Guatemala	36	5,742	15	3,081
Honduras	40	8,476	4	1,156
Nicaragua	27	5,022	3	567
Panama	598	129,619	75	24,255
Salvador	43	8,873	8	1,625
Mexico	1,177	230,344	80	27,314
Newfoundland and Labrador	1	181	.....	.....
Bermudas	204	35,781	23	6,791
Barbados	28	5,134	6	1,506
Jamaica	47	9,350	6	2,039
Trinidad and Tobago	31	6,736	1	897
Other British West Indies	55	9,566	4	1,637
Cuba	2,033	368,730	526	109,364
Dominican Republic	101	19,761	15	7,372
Netherland West Indies	98	18,613	6	1,960
French West Indies	14	1,401	.....	.....
Haiti, Republic of	91	15,706	8	1,972
Virgin Islands of U. S.	12	3,584	1	450
Argentina	2,867	347,236	244	92,540
Bolivia	6	1,006	.....	.....
Brazil	1,424	173,175	289	79,999
Chile	815	104,358	76	17,790
Colombia	328	49,802	25	8,347
Ecuador	56	9,510	8	1,014
British Guiana	22	3,456	.....	.....
Surinam	3	760	.....	.....
French Guiana	5	798	.....	.....
Paraguay	16	2,186	2	1,105
Peru	141	21,745	108	19,811
Uruguay	1,184	156,572	202	36,649
Venezuela	805	128,420	77	21,281
Aden	27	4,322	3	759
Arabia	4	881	.....	.....
British India	2,459	399,115	287	45,684
British Malaya	553	88,984	57	12,528
Ceylon	157	22,923	3	1,136
China	1,062	180,897	23	7,338
Java and Madura	231	38,336	11	1,896
Other Netherland East Indies	81	16,155	7	2,756
French Indo-China	156	22,698	.....	.....
Hong Kong	97	12,959	8	2,278
Japan	724	121,600	155	36,606
Kwantung	56	15,749	4	744
Palestine	14	2,735	2	635
Philippine Islands	525	73,365	163	40,514
Siam	14	2,792	2	1,058
Syria	6	1,387	.....	.....
Turkey	116	16,739	18	2,691
Australia	1,343	181,842	211	35,930
British Oceania	8	913	6	3,693
New Zealand	344	43,071	244	37,617
Belgian Congo	.....	.....	3	427
British East Africa	176	32,285	17	3,421
Union of South Africa	2,214	390,205	212	37,217
Other British South Africa	10	806	.....	.....
Gold Coast	181	26,254	4	1,188
Nigeria	200	28,721	60	3,690
Other British West Africa	17	2,319	1	142
Egypt	220	26,465	16	2,174
Algeria and Tunisia	257	34,648	15	1,898
Madagascar	3	585	.....	.....
Other French Africa	12	2,828	1	142
Liberia	1	95	.....	.....
Morocco	224	33,562	57	9,813
Mozambique	39	6,982	.....	.....
Other Portuguese Africa	1	121	.....	.....
Canary Islands	43	7,578	.....	.....
Other Spanish Africa	1	151	.....	.....
Total	56,658	$8,235,849	10,900	$2,060,923
Shipments to Hawaii	1,395	$ 231,547	173	$ 41,054
Porto Rico	568	$ 112,492	52	$ 13,768

REFRIGERATOR THIRD AS LOAD BUILDER

New York City—Each electric refrigerator uses approximately 600 kilowatt hours per year, according to estimates prepared by the National Electric Light Association. Other consumption current estimates follow:

Appliance	Total number in homes on January 1, 1930	Estimated use of current (kwhr) per year for each appliance in regular use
Flat-irons	18,800,000	50
Vacuum Cleaners	8,720,000	36
Washing Machines	6,680,000	24
Fans	5,880,000	24
Toasters	7,420,000	50
Percolators	5,750,000	50
Radio Sets	6,700,000	90
Space Heaters	3,220,000	40
Sewing Machines	1,400,000	10
Ironing Machines	580,000	125
Refrigerators	1,880,000	600
Ranges	630,000	2,000
Oil Burners	200,000	240
Water Heaters		3,000

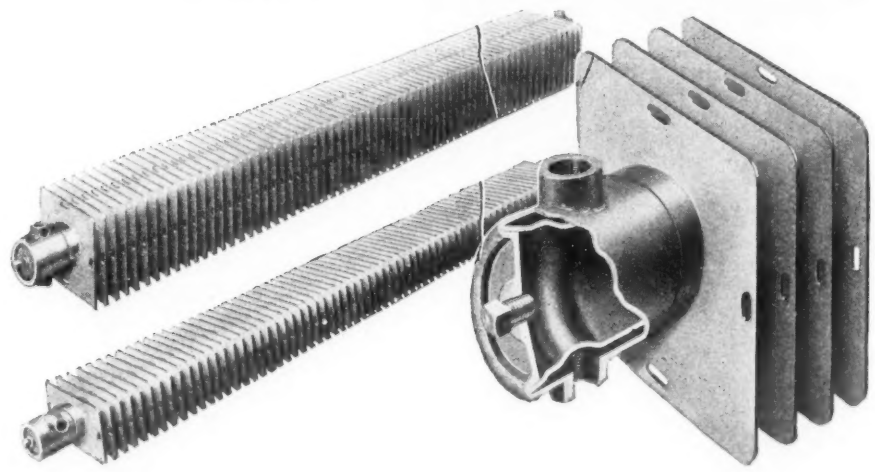
NEWS FROM MEXICO

Mexico City, Mex.—The Lake Chapala Light and Power Co., which supplies electric light and power to the city of Guadalajara, capital of the state of Jalisco, and Mexico's second largest city, has been granted a General Electric franchise for its territory.

Mexico City, Mex.—The Mexican Autorefrigeration Corp., which specializes in the retailing of Frigidaires in this territory, has installed thirty 7-cu. ft. Frigidaires in the "Apartment Artes," an American style apartment house in a fashionable residential district.

Proved Winners—

HYDRO-THERMAL GRIDS



Tube-within-a-Tube Multiple Cooling Units

•

Maximum Heat Absorption

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Short Gas Travel

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Rapid Heat Dissipation

Successful Installations operating in~

Packing Plants ... Dairies ...
Delicatessens ... Markets ...
Cafeterias ... Soda Fountains
etc., etc.

Applied to

Refrigerators — Display Cases
Meat Coolers — Fish Cases
Florists' Boxes — Room Cooling
etc., etc.

Typical application of Hydro-Thermal Grids to Butcher's Refrigerator

For use with any ammonia or methyl chloride system of mechanical refrigeration.

AMERICAN ENGINEERING CO.

2420 Aramingo Avenue, Philadelphia, Pa.

REQUESTS FOR INFORMATION

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Small Dairy Plant

Query No. 412—"Do you know of several companies manufacturing small equipment for dairies. We are interested in equipment suitable to cool cream and hold five or six 5-gal. cans at a low temperature for a few hours each day. The equipment, to be powered by a gas motor, should be manually operated for running time?

"We would build the particular vats and cooling stand, the manufacturer to furnish the compressor and pipe assemblies only.

"We would like to receive information on equipment from several manufacturers, with approximate costs."

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other material recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Filtrine

Water coolers for both the remote and circulating systems are described in a new eight-page folder just issued by the Filtrine Manufacturing Co., Brooklyn, N. Y. The pamphlet, known as Form 78, illustrates the different models with pictures and specifications and explains their operation. These coolers employ the direct contact storage method, using the dry system of cooling. Form 200 illustrates Filtrine filters for use with all makes of electrically refrigerated water coolers.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of Electric Refrigeration News, published every two weeks at Detroit, Michigan, for April 1, 1931.
STATE OF MICHIGAN,
COUNTY OF WAYNE, ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared George N. Congdon, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Electric Refrigeration News, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and, if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, F. M. Cockrell, Detroit, Mich.

Editor, George F. Taubeneck, Detroit, Mich.

Managing Editor, John Drittler, Detroit, Mich.

Business Manager, Geo. N. Congdon, Ferndale, Mich.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Business News Publishing Co., 550 Maccabees Bldg., Detroit, Mich.

F. M. Cockrell, 18090 Wildemere, Detroit, Mich.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is. (This information is required from daily publications only.)

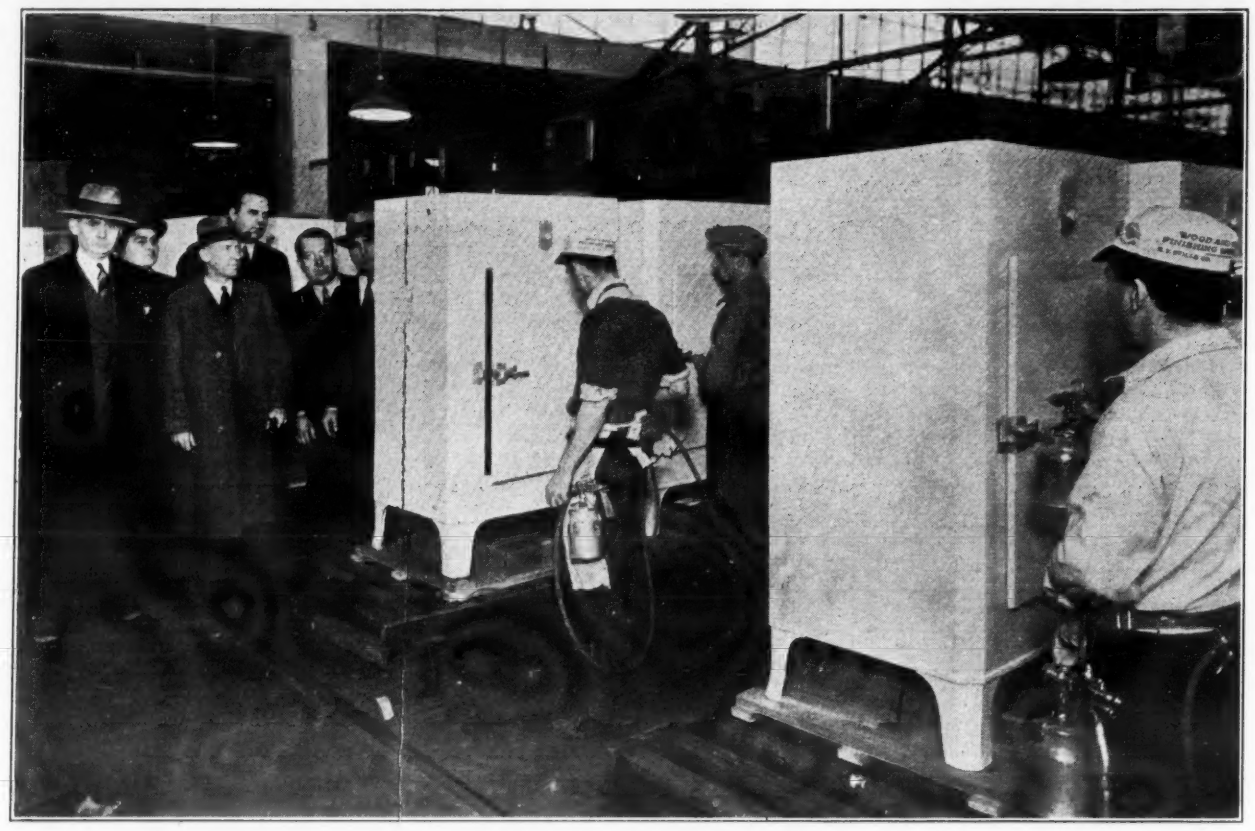
GEORGE N. CONGDON,
(Signature of Business Manager.)

Sworn to and subscribed before me this 19th day of March, 1931.

SEAL. ANNA SACHS.

(My commission expires August 17, 1934.)

Majestic Chiefs See Shipments Get Under Way



Grigsby-Grunow executives inspecting factory after refrigerator production was resumed.

R. H. Macy Store In the Market

★

R. H. MACY & CO.,
Inc.
34th Street and Broadway,
New York
April 2, 1931.

ELECTRIC REFRIGERATION NEWS,
550 Maccabees Building,
Detroit, Michigan.
Gentlemen:

Will you please let us know where we can obtain an impartial expression or viewpoint on the various electric refrigerators manufactured in the country today. We are at present, and have been for several months, testing various electric refrigerators. To supplement our tests we would like to get in contact with some authority on electric refrigeration.

At present we handle no electric refrigerator. As soon as we have satisfied ourselves as to the quality of the refrigerator we will put one in. If you can help us, we would appreciate it very much.

Yours very truly,
L. D. JALKUT,
Department 116.

LDJ:ER

NORGE DEALERS ATTEND BOSTON MEETING

Boston—At a dealer meeting attended by 150 Norge electric refrigerator dealers from all sections of New England, held recently in the Hotel Kenmore, sponsored by the General Equipment Corp., Norge distributor in Boston, the fact was brought out that sales of electric refrigerators showed a 23 per cent increase in 1930 over 1929, while the sales of other household appliances were falling off.

LARGER TERRITORY

Buffalo—Kelvinator Buffalo Corp. announces the addition of twenty new counties to its territory, eighteen in New York State and two in Pennsylvania. Before this expansion the company's territory comprised two western New York counties.

VEGETABLE FRESHNER PLACED ON MARKET

Pittsburgh—A new low-priced refrigerator accessory for keeping vegetables crisp and fresh while they are stored in a household refrigerator has been placed on the market by the Federal Enameling & Stamping Co. of this city.

Known as the Vegetable Freshener, the new accessory is constructed of Armco iron finished with porcelain enamel, in colors of light pastel green, old ivory or snow white.

At the present time the Freshner is offered in only one size. The cover fitting on the top of the container has air vents in each corner, which allow for ventilation.

Merchandising plans for the product, according to officials of the company, call for distribution through jobbers.

OIL BURNER SHOW

Philadelphia — Many new developments in automatic heating equipment are expected to be introduced at the eighth annual show of the American Oil Burner Association, which will be held here April 13 to 18.

Leading manufacturers of oil burners and accessories are known to have pushed extensive research programs during the past year, with the result that they are expected to exhibit new and improved types of burners.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE if paid in advance — Positions Wanted — fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

POSITIONS AVAILABLE

SALESMEN for exclusive open territories to call on dealers of refrigerators, with a reliable line of refrigerator display material. Very attractive straight commission basis. Write selling experience and names of last two employers. Realistic Displays, Inc., 266 Fabyan Place, Newark, N. J.

YOU CAN USE FIFTY WORDS in this column to describe the qualifications of the man you are seeking—at a special (paid in advance) rate of only $3.00. (This paragraph contains exactly fifty words). Refrigeration men who are looking for new business connections keep their eyes on The Condenser column.

REFRIGERATION Engineer, A. S. R. E. member now employed, seeks new connection with aggressive concern. Familiar with SO_2 and CH_3CL, modern technique and costs, of domestic and small commercial refrigeration equipment. Capable of taking full charge of designing, sales, service, manufacturing or experimental departments. Age 35. Box 325.

VALUABLE refrigeration and idea man desires position with growing company. Six years Frigidaire commercial supervisor. (Chicago territory.) Box No. 324.

Commercial Sales

Commercial Refrigeration will round out your selling lines and open vast new opportunities for profit.

Every Excelsior sale means a satisfying and profitable investment for the buyer—a profitable and trouble-free transaction for the dealer. Excelsiors are sturdy and will give a lifetime of dependable service. Every installation will help make many more additional sales.

The New Carbondale Excelsiors are built by one of the pioneers in the industry, with a background of more than 40 years' experience in refrigeration. Excelsior Dealers get the benefit of unusual Engineering help and cooperation. Some attractive territory is still open. Write TODAY for full information.

THE CARBONDALE MACHINE CO.
MAIN OFFICE:
CARBONDALE, PA.

Address inquiries to The Carbondale Machine Co., Excelsior Division, South Norwalk, Conn.

SUBSCRIPTION ORDER

Electric Refrigeration News
550 Maccabees Building
Detroit, Michigan 1931

Gentlemen: Please enter my subscription to ELECTRIC REFRIGERATION NEWS.

United States and Possessions: ☐ $2.00 per year ☐ Three years for $5.00
All other Countries: ☐ $2.25 per year ☐ Two years for $4.00
Refrigerated Food Section only $1.00 per year.

I am enclosing payment in the form of ☐ Check ☐ P. O. Order ☐ Cash

Name.....
Attention of or Care of.....
Street Address.....
City and State.....

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For paid-in-advance subscriptions in United States only. Send check with order. Papers will be mailed to individual addresses.

5 or more subscriptions entered at one time, $1.75 per year each.

10 or more subscriptions entered at one time, $1.50 per year each.

20 or more subscriptions entered at one time, $1.25 per year each.

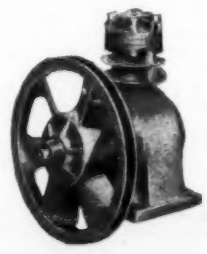
50 or more subscriptions entered at one time, $1.00 per year each.

4-8-31

KULAIR Electrical Refrigerating Products

Simplicity, quality, efficiency and capacity unequaled. A size for every use.

Compressors from 95 Lbs. to 4300 Lbs. I. M. C.



NO. 1300 COMPRESSOR
Single Cylinder 1⅝ x 1⅝
300 to 425 R. P. M.

Condensing Units from Small Domestic to Large Commercial Capacities.

AIR COOLED WATER COOLED
METHYL CHLORIDE or SULPHUR DIOXIDE

POLICIES
PRODUCTS
PRICES

Providing Proper Profit To All Distributors.
WRITE FOR FULL INFORMATION TO

KULAIR CORPORATION PHILADELPHIA, PA.

15,000 Copies

Refrigerated Food Section

In Three Parts—Part 2

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
VOL. 5, NO. 16, SERIAL NO. 118

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DETROIT, MICHIGAN, APRIL 8, 1931

Entered as second class matter Aug. 1, 1927, at Detroit, Mich.

FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEAR

McMILLAN PLANS COMPLETE OUTFIT FOR NEW STORE

Detroit—Complete refrigerating equipment for preserving fish, meats, vegetables, butter, cheese, fruits and quick frozen foods will be installed for the G. & R. McMillan Co. in the New Fisher Building, where that company will move about the middle of July, according to N. Russell, of the McMillan organization.

A basement and three floors of one wing of the new Fisher Building are being prepared for this wholesale and retail grocery business.

Quick frozen vegetables will be kept in a 7 x 11 ft. room, and quick frozen meats will be preserved in a 8 x 7 ft. room in the new quarters, Mr. Russell said. Both will be insulated with six inches of cork in order to keep the temperature at 10 deg. F.

The cheese room will be maintained at 40 deg. F., and is 11 x 9 ft. Butter will be kept in a 35 deg. room 13 x 9 ft., and fresh fish will be preserved in a 35 deg. room 7 x 6 ft. in size.

All but the vaults for quick-frozen foods will be insulated with 4 in. of cork. The Detroit branch of L. Mundet & Son, Inc., has the insulation contract.

Approximately 73 ft. of refrigerated display cases will be used in the new store, Mr. Russell said. They are being furnished by the Detroit Butcher Supply Co.

A 12-ton Kroeschell carbonic refrigerating system will cool the calcium chloride brine, which is to be circulated to display cases and fresh food coolers. The quick frozen food storage rooms will be equipped with a direct expansion system. Wallich Ice Machine Co. is providing the refrigerating machinery.

The marketing of quick-frozen fruits and vegetables to hotels and some of Detroit's large restaurants is one of the activities of the McMillan company.

At present no plans are under way to retail frozen products direct to consumers, according to Mr. Russell.

Strawberries and peaches are bought in Buffalo, where the MacIntosh organization freezes them; and quick frozen peas and spinach are purchased from the A. C. Hemingway & Co., Syracuse canners. Cherries picked in Port Clinton, Ohio, in the morning, trucked to the Detroit Refrigerating Co. and frozen by that company the same day, are also sold by the McMillan Co.

MEAT PACKERS REPORT IMPROVEMENT IN TRADE

Chicago—Improvement in the demand for pork products, with some strengthening of prices, featured the meat trade during March, according to the Institute of American Meat Packers.

The demand for cured pork products showed marked improvement over February, and equalled or exceeded the usual pre-Easter demand. A heavy storm during the early part of the month resulted in a temporary severe shortage of supply, especially in eastern markets, and prices of some fresh pork cuts rose sharply. Relatively large supplies at markets since that time have depressed the price to some extent, but much of the gain was retained up to the close of the month.

The wholesale dressed beef trade improved somewhat during the month, and prices at the close were higher than at the close of the preceding month.

In the United Kingdom, there was a good sale of meat from stocks on hand

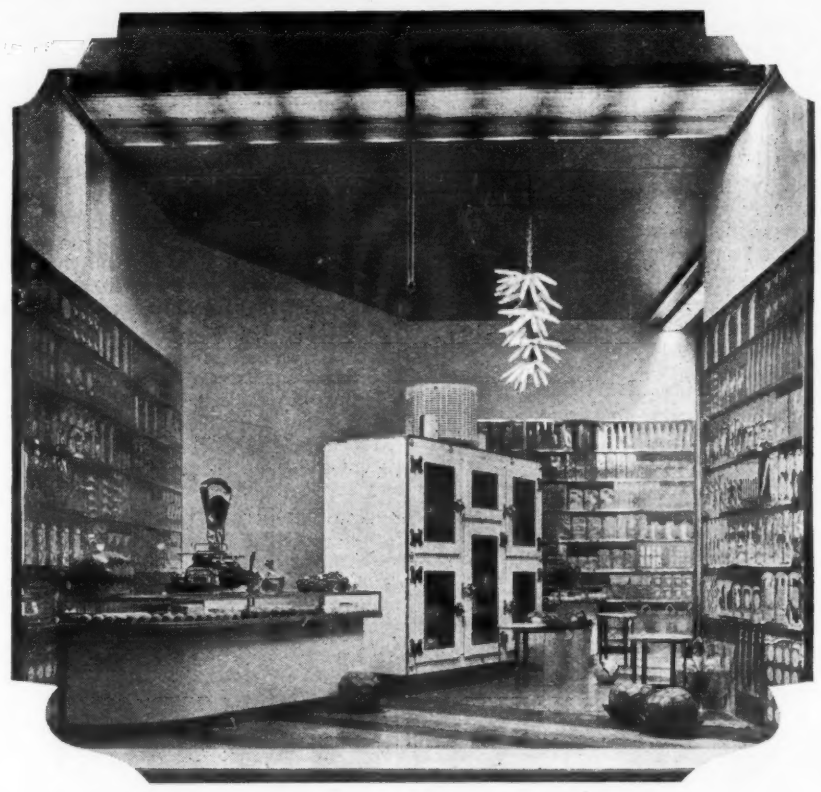
(Concluded on Page 2, Column 4)

CALIFORNIANS COMPLETE FREEZING EXPERIMENTS

Berkeley, Calif.—G. L. Marsh, laboratory official in the College of Agriculture at the University of California, here, reports successful experiments, over a period of years, with the preservation of persimmon pulp and avocado pulp by freezing, a similar process using fig pulp, and the preservation on an economical basis of a great variety of crushed fruits for use in fruit ice creams.

Several years ago, Marsh and his assistant, M. A. Joslyn, began a series of tests, which led to the discovery of new methods of freezing fruit juices.

Model Commercial Display



R. Cooper, Jr., has set up this model food shop in one corner of his mammoth new Chicago showroom.

PACIFIC CITRUS FRUIT EXPORTS HIT HIGH LEVEL

San Francisco—Popularity of American citrus fruits abroad has helped water shipping, which has been seriously depressed, according to the American Institute of Food Distribution.

An export crop of 3,000,000 boxes from California and 6,500,000 from the Pacific Northwest this year have doubled and in some cases tripled the operation of refrigerator ships.

In the last five months more cargoes of fresh fruit have left the Northwest than in any corresponding period, the Institute claims.

NATIONAL DAIRY TO TEST ORANGE JUICE RETAILING

Tampa, Fla.—Sixty thousand gallons of orange juice squeezed from 2,500,000 oranges are en route in 10 refrigerator cars from the Tampa plant of National Juice Co., subsidiary of National Dairy Products, for experimental distribution on milk routes in Buffalo, Cleveland, New York, Erie and New Haven.

Delivery of the juice will be made in milk wagons and trucks equipped for icing. It will be packed in half-pint and quart containers.

NEW JERSEY PROPOSES FARM PRODUCE MARKETS

Jersey City, N. J.—A state-wide system of market centers for distribution of farm products is proposed in a report submitted to the New Jersey Legislature by the State Public Marketing Committee.

Possibilities of grouping small purchasers to enable buying in truckload or carload lots direct from the producer is also discussed in this report.

Grading and packing of farm products in large units, and equalization of freight rates to place New Jersey on a competitive basis with other parts of the country, are suggested as aids to state farmers.

IOWA POULTRY, BUTTER DEALERS ORGANIZE

Iowa City, Ia.—Under sponsorship of the state agricultural department, Iowa Poultry, Butter and Egg Dealers' Association, which includes many of the small produce dealers of the state, has been organized.

The state will be divided into 31 districts through which better organization work among the 1,200 members can be effected.

Sally Lee Frigid Meats Get Wider Distribution

By George F. Taubeneck

Indianapolis—A brand new deal for the handling of Sally Lee Frigid Meats has been decided upon by officials of the Indianappolis Abattoir Co. It simply wasn't in the cards for the Muncie set-up to be permanently successful, believes Louis F. Thompson, who directs the sales of these quick-frozen meats, and now the venture has assumed different proportions. Distribution is now made through outlets in several small cities instead of one, and electric refrigeration has replaced solid carbon dioxide.

Formerly the sale of these products was limited to Muncie, Ind., which city had a number of stores selling these quick-frozen meats. Now the outlets at Muncie have been reduced to three; and within a narrowly circumscribed territory east of Indianapolis, 35 grocery stores are selling Sally Lee Frigid Meats.

During the Muncie campaign, and up until a few weeks ago, Sally Lee frozen products were kept in cases refrigerated by solid carbon dioxide. Now all of those cases have been "jerked," and in their places are low temperature boxes built by the Starr Co. of Richmond, Ind.

These Starr cases are built on the ice cream cabinet principle, have no display feature, and are refrigerated by ⅓ h. p. Starr sulphur dioxide compressors. They maintain zero temperatures.

Approved retailers get these cabinets from the Indianapolis Abattoir Co. upon the making of a small deposit, the signing of a 90-day contract to handle quick-frozen meats, the payment of $6.75 a month rental as long as they keep the case, and the agreement to put nothing but Sally Lee Frigid Meats into the aforesaid low temperature box.

Solid carbon dioxide for the cases used in Muncie had been furnished to the Muncie retailers by the Indianpolis Abattoir Co.

According to Thompson, this refrigerant kept the boxes at uneven and undependable temperatures. Moreover, it was necessary to have it shipped from Chicago, and the operation proved to be too costly to be continued.

The territory in which Sally Lee Frigid Meats are now merchandised includes a number of small towns adjacent to Indianapolis.

Farthest from Indianapolis are four stores located in Lafayette, the home of Purdue University, at which place important agricultural and engineering experiment stations are located, and where Indianapolis Abattoir officials believe consumer demand for this food innovation can be readily created.

Other sizeable small cities at which Sally Lee Frigid Meats are sold include Bloomington (home of Indiana State University), Anderson, Lebanon, Connorsville and Newcastle. The last men-

(Concluded on Page 2, Column 1)

Tom Huston Orders More Cabinets

Montezuma, Ga.—To handle the merchandising of his frozen orange juice, quick frozen peaches, and confections in Florida outlets, Tom Huston, president of Tom Huston Frozen Foods, Inc., has just purchased 150 Frigidaire ice cream cabinets.

Recently Huston installed 100 Frigidaire portable two-hole ice cream cabinets in outlets in Atlanta and other Georgia cities.

CALIFORNIA GROCERS HOLD MERCHANDISING CLASSES

Los Angeles—Refrigeration plays a prominent part in the educational activities of the Southern California Retail Grocers' Association.

In the retail merchandising classes for grocers which the association has recently introduced, the first of their kind on the West Coast, refrigeration as well as other phases of food maintenance and merchandising principles are discussed.

The association works closely with local refrigeration distributors in sponsoring installations in remodeled stores and markets. And at the annual food show held under the sponsorship of the association, refrigeration concerns stage exhibits and demonstrations.

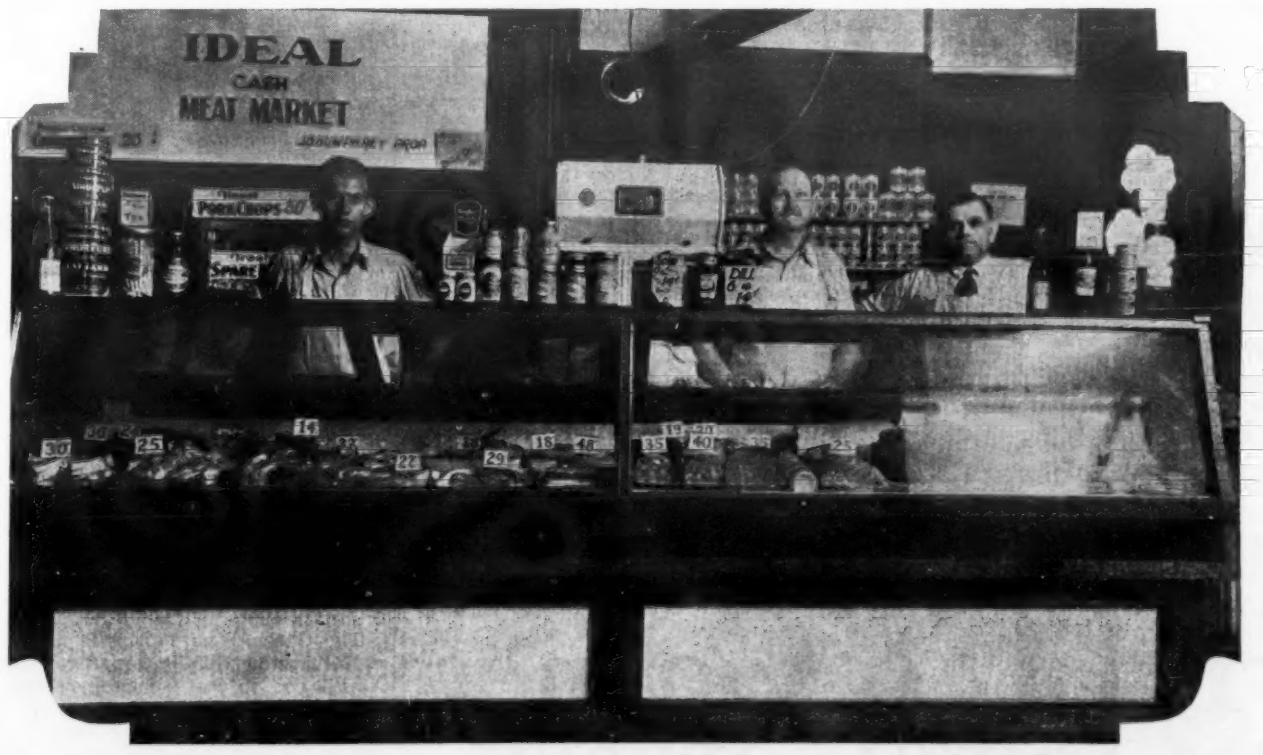
Held usually in the early spring, the food show this year has been postponed to the fall, being scheduled for September 20 to 26. It will be combined at that time with the annual convention of the State Retail Grocers' and Merchants' Association.

BAKER ADDS ICE CREAM AS SIDE LINE

Waukegan, Ill.—Ice cream has been added as a side line by a retail baker in this city.

A small mechanical mixer in which he makes the ice cream is adjusted on the counter in his shop.

Evansville Butcher Buys New Equipment



Three Ideal Cash Markets in Evansville, Ind., are now Kelvinator equipped. Since installing refrigeration in his first store, the proprietor has purchased additional equipment from the A-1 Building Material Co. for his two larger stores.

PRESIDENT OF BIG FISHER CHAIN DIES IN CLEVELAND

Cleveland—Manning F. Fisher, 68, president of the Fisher Brothers chain of 376 stores in and about Cleveland, has just died as the result of shock suffered in a train wreck in Saskatchewan, Canada.

The Fisher Bros. Co. early adopted refrigeration, and now considerable equipment is utilized in the 316 grocery and 60 meat markets operated by the firm.

Mr. Fisher introduced original ideas in the operation of the business. All worthy employees wanting to go to night school were sent at his expense. He believed in being personally friendly with his employees. All employees in the main office of the firm at 2323 Lakeside Ave. have been behind the counter of a Fisher store.

ACIDOPHOLUS ICE CREAM SOLD IN DRUG STORES

Yonkers, N. Y.—Distribution of ice cream containing acidopholus bacteria is being made on an experimental basis through drug stores in Westchester County.

The acidopholus in the ice cream is tasteless, without its efficacy being impaired. No advertising has been done so far, since the promotion work has been limited to acquainting physicians with the product.

Thirty-Two Stores in Indiana Cities Sell Sally Lee Frozen Meats

(*Concluded from Page 1, Column 5*)

tioned city has four outlets, Connorsville has three, and Lebanon two.

All 35 of these outlets are grocery stores. Almost one-third of them have been selected from retailers who sought the franchise. The remainder was sold on the idea by Thompson and his cohorts.

Eighty-five per cent of these stores are independents. These independent stores take almost 90% of their orders over the telephone. For that reason, display is not particularly essential to the success of these dealers in merchandising quick-frozen meats, Thompson points out.

"We do not decry the value of the adequate display of our products," Thompson declares. "In fact, we think that when housewives see how neat and sanitary our packaged meats look, they will be easily won over.

"But we do know that our products can be sold without display, for we have the proof in our sales figures.

"Out here in Indiana, food retailers can't be persuaded to pay several hundred dollars for a display case to merchandise a new line. We can't afford to buy a quantity of them. So we simply get the lowest priced equipment available which will do the job and rent it reasonably to our retailers.

Although the Indianapolis Abattoir Co. has more than 1,000 Indiana customers (meat markets) who buy Sally Lee fresh meats, scarcely any complaints have been lodged by these butchers against the merchandising of quick-frozen meats.

Even Muncie, where an extensive campaign was carried on in 1930, failed to produce any indignant butchers or losses of fresh meat business because of quick-freezing activities.

Sally Lee Frigid Meats are quick-frozen by the Kolbe system. The meats are cut, molded (if possible) into uniform shapes, and placed in large pans.

These pans ride through a brine trough like miniature scows, entering at one end of the freezer, and emerging at the other end of the trough frozen.

After freezing, the meat cuts are packaged in cellophane. Sausages are packaged before freezing.

Although the Indianapolis Abattoir Co. has experimented with fruits and vegetables, so far its packaged meats comprise the only quick-frozen food line it markets. The quick-freezing of fish, fowl and game has not been attempted.

Two lines of these meats, the Standard and the Premier lines, are now being sold. The latter is the better quality line, and sells at higher prices.

Standard quick-frozen meat cuts include: Porterhouse steak, boiling beef, club steak, sirloin steak, shoulder steak, round steak, rib steak, chuck steak, Swiss steak, flank steak, rolled rib roast, shoulder roast, chuck roast, beef liver, pork chops, pork loin roast, beef sweetbreads, boiling beef, rump roast, stewing beef and cottage pork steak.

All of above may be had in Premier line except cottage pork steak.

Premier products include, in addition to the above mentioned cuts: Pork tenderloin, pork fillet, hamburger, beef brains, beef tenderloin, lamb chops, lamb shoulder roast, leg of lamb roast, cottage pork roast, veal cutlet, veal chops (loin), veal roast, stewing veal, calf sweetbreads, rump roast, pork sausage, stewing lamb and top sirloin.

CHILLED INGREDIENTS USED IN NEW SODA

Cleveland—An ice cream soda which sells for 25 cents has been recently introduced by R. W. Miller, who is in charge of soda fountains for Harvey, Inc. The soda was tested out at the Cleveland Union Terminal, where it has proved successful, according to Mr. Miller.

It is made up of two scoops of vanilla ice cream, chocolate of a special make, a fine stream of carbonated water, a topping of whipped cream and several cubes of pineapple, colored red.

Another feature of this de luxe soda is the precooling of all the ingredients. In a room adjoining the fountain is the carbonizing unit. The carbonized and plain water flows through a number of small coils in a tank of fresh water which is mechanically cooled.

The water then goes to the fountain, where it remains in auxiliary coolers, so that when it is drawn off at the draft arm its temperature averages 35 degrees.

The syrups, crushed fruits, and whipped cream are kept thoroughly chilled, and the ice cream is always kept at a temperature of seven degrees above zero.

G. E. OFFICIAL SPEAKS TO N. Y. ADVERTISING CLUB

New York City—F. R. Davis of the General Electric Co. publicity department, addressed the Magazine Group of the Advertising Club of New York Friday, March 27.

Davis spoke on "The Educational and Service Value of Magazines to the Manufacturer."

Meat Packers Report Improvement In Domestic Export Trade

(*Concluded from Page 1, Column 1*)

at prices better than those prevailing a month ago. There was some buying of sweet pickled hams for immediate and future delivery, and of short clear backs. The prices bid for hams and shoulders for future delivery improved considerably during the month. There was relatively little buying of other meat cuts. Sales of bellies were very light.

Demand for lard for immediate delivery in the United Kingdom continued good throughout the month, although present prices are somewhat under the domestic market. Danish hog killing continued heavy. Bacon is being shipped to the United Kingdom from many places on the continent, and resulting heavy supplies keep prices at a comparatively low level.

Trade in meats on the continent remained dull throughout the entire period. There was a weak demand for lard and meats, both for immediate and future delivery. There was considerable buying of oleo oil.

In the domestic market, trade in pork products was more brisk than in February, although prices at the end of the month showed some decline from mid-month prices. Prices of pork products seem to be on a more stable basis than at the first of March.

The wholesale prices of cured and smoked hams moved to slightly higher levels. Demand for picnics increased substantially, and prices increased to a figure more nearly representing the value of the product at prevailing live hog prices.

Sales of bacon were better, with lighter averages selling at higher prices. Demand for boiled hams and sausage was only fair, although slightly better than in February.

The fresh pork trade was brisk after the severe storm in the early part of the month, at substantially better prices. The market weakened gradually toward the close of the period, but retained much of the gains which it had made. The dry salt meat trade also was stronger.

The lard trade in March was considerably better than in February, with correspondingly higher prices. At the middle of the month lard prices were relatively strong, but moved lower in the last two weeks. The price was higher as the month closed than at the beginning, however.

Receipts of hogs at 20 principal markets were lighter than in the preceding month, and also lighter than March a year ago. A relatively large number of light fall pigs came to market, and the spread in price between light and heavy hogs widened.

Value of product approached more nearly the price paid for live hogs, and the cutting loss decreased during the period, although the average price of hogs, plus expenses, at the close of the month was still greater than the aggregate current market value of the product. The price of hogs at the close of March was higher than at the close of February.

Receipts of cattle for the month of March at 20 principal markets were lighter than the corresponding month a year ago, but somewhat heavier than February, 1931. Receipts included a larger proportion than usual of the better grades of cattle.

In the first week, prices of most classes of butcher stock were higher than in the final week of February. Receipts were slightly lighter than during the previous week, but substantially heavier than during the corresponding week a year ago.

During the second week, prices of most classes of cattle moved higher. Receipts continued lighter than a year ago.

In the third week of the month, prices of cutters and bulls showed little change, while steers were steady to a little lower. Heifers and cows sold at prices slightly above those prevailing during the previous week. Receipts were heavier than in the preceding week and in the corresponding week a year ago.

During the fourth week, prices of heavy cattle were steady to strong, while most other classes sold at somewhat lower levels. Prices of good and choice veal calves advanced sharply. Receipts continued heavier than in the preceding week and were heavier than in the corresponding week in 1930.

There was a substantial supply of dressed beef during the entire month. Trade was relatively poor in spite of the fact that prices on most grades were somewhat higher than those prevailing during the previous month. Demand for forequarters practically equalled demand for hindquarters.

The demand for hides, as well as for some other by-products, was better, and prices were slightly higher.

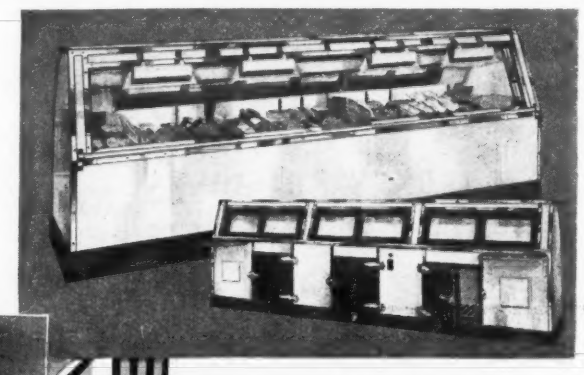
Receipts of sheep and lambs at 20 markets were slightly heavier in March than in February, but lighter than in March a year ago. In the first week, receipts were lighter than in the preceding week. Prices of lambs were somewhat higher, while other classes were steady.

In the second week, receipts were about the same as in the previous week, but lighter than a year ago. Lambs were higher, and sheep and feeders were steady. In the third week, receipts were somewhat lighter than the previous week. Prices of lambs continued to move to higher levels, and other classes were steady.

During the fourth week, receipts were about the same as in the third week. Prices of all classes moved somewhat lower.

Demand for dressed product improved somewhat during the month. There was a substantial volume of trade in wool, and prices were somewhat higher. The pickled skin trade was steady at prevailing low prices.

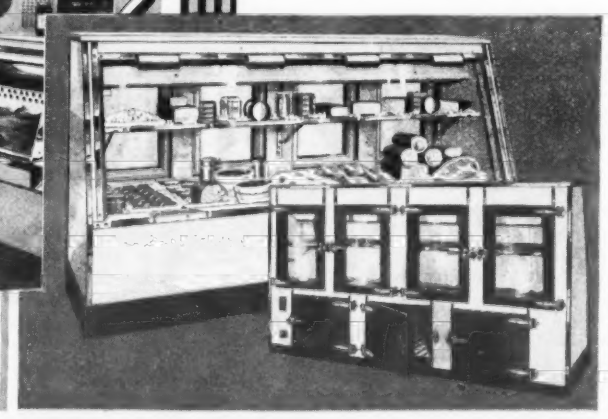
The HILL Dry-Cold



Above: Famous Hill Model 500-C Combination Display Case.

Left: Actual photograph of typical installation of Weis Pure Food Stores, Sunbury, Pa.

Below: Latest Hill Model 510 Delicatessen Case, having patented over head circulation system.



STANDARDIZE

Make your floor space pay you! There is only one way to win the appetites of the public—show your perishables to them in a sanitary, up-to-date way. Investigate the Hill cases and compare them with others. Does it not seem logical that the Hill case offers greater value as well as all-around satisfaction when you consider the hundreds that are being sold? Business leaders everywhere are discovering that the Hill Dry-Cold cases are the most economical, best designed, and constructed with *many more improvements*. Best of all—they make customers stop, look and purchase! This preference which has existed for years is stronger today than in any previous time of the Hill's 40 years history. Remember—the summer heat will soon be here and that Hill's cost far less, in the end, than all others. Let us help you standardize today.

WRITE FOR ILLUSTRATED BOOKLET

C.V. HILL & Co. Inc.

TRENTON, NEW JERSEY

Chain Store Sales Statistics

SALES for 51 representative chain store companies for the year of 1930 amounted to $3,439,444,979, or 0.23 per cent over the 1929 sales for the same organizations.

December sales for these companies amounted to $359,402,010, a decrease of 4.9 per cent from the December, 1929, figure. Each classification for these companies showed a decline in December, 1930, compared to December, 1929.

Grocery chains, drug chains, and shoe chains showed gains as groups for the full year, compared to figures for 1929. Restaurants, apparel and department store chains, miscellaneous chains and 5 and 10c-$1.00 chains showed declines in 1930.

Compiled by E. A. Pierce & Co., the following table shows the records by classification of chains for the 51 organizations covered:

No.	Type	December 1930	Change 1929 to 1930	12 Months of 1930	Change 1929 to 1930
12	Grocery Chains	$172,989,423	— 5.4%	$2,084,454,298	+ 1.00%
12	5 and 10c-$1.00	120,790,851	— 0.87	760,645,289	— 0.32
9	Apparel and Dept. Stores	34,581,539	—13.7	283,225,404	— 2.9
5	Shoe Chains	8,266,472	— 1.5	79,149,158	+ 4.7
6	Restaurant	6,432,798	— 4.5	74,987,332	— 3.0
2	Drug	6,433,952	— 2.5	68,425,537	+10.1
5	Miscellaneous	9,906,975	—13.4	89,457,961	— 9.6
	Total (51 Companies)	$359,402,010	— 4.9	$3,439,444,979	+ 0.23

DEALER REPORTS GOOD COMMERCIAL BUSINESS

Bridgeport, Conn.—John E. Leech has been named domestic sales manager for the Tucker Machine Co., Kelvinator dealer, with J. E. Logan continuing as commercial manager. Six salesmen have been added to the domestic sales force, according to Mr. Leech.

Commercial business has been exceptionally strong, Mr. Logan reports. The following installations were made.

The Green Line Florist is now using a Kelvinator WF-40 compressor and a X5-140 coil to cool a large concrete and cork flower storage refrigerator.

Rudolpho Paci, who operates a market at 255 Lindley St., ordered a WR-41 compressor with three XO-130 coils to cool his walk-in refrigerator.

Two dairies which were equipped were: A. Stannard, Monroe, Conn., a four-can Victor milk cooling cabinet operated by a S-18 compressor, and William Parker, Brookfield, Conn., who uses a two-can Esco milk cooler with a J-21 condensing unit.

OHIO MILK DEALERS ORDER 40 REFRIGERATORS

East Liverpool, Ohio—Frank Williams, General Electric dealer, will install 40 electric refrigerators in the stores of dealers handling Golden Star Milk in this district.

The refrigerators will represent an expenditure of $12,000 and will be installed in Golden Star dealer stores in East Liverpool, Chester, Newell and Weelsville.

A&P OFFICIALS FIND FOOD HABITS VARY

New York City—Food habits of New Yorkers, Philadelphians and New Englanders vary considerably, report statisticians of the Atlantic & Pacific stores.

Philadelphia consumes more ice cream, scrapple, prunes and pepper pot soup per capita than any other market. New England consumes more fish, potatoes and corned beef per capita than any other section of the United States, and also desires yellow corn and fat bacon.

New York tastes are cosmopolitan, and there is a strong preference in this market for well-known brands. In this city and on the Pacific Coast, there is a strong market for white eggs, but New England and the Middle West and rural districts prefer the brown eggs.

Chicago is an excellent market in which to introduce new products, A. & P. executives have learned.

There are certain unmistakable national trends, including a growing demand for fresh fruits and vegetables, as well as an increased demand for most prepared foods.

Among recent developments is an increasing market for tomato juice, sauer kraut juice, strained fruits and vegetables for babies, canned cooked hams and chicken, chop suey and other Chinese foods.

There is a trend away from tub to package butter, print butter today filling more than one-half of the demand. People want a lighter colored butter than formerly, A. & P. statisticians find.

KROGER IN CINCINNATI OPENS BIG LUNCHEONETTE

Cincinnati—A luncheonette and soda fountain has been recently established in a new store operated by the Kroger Grocery & Baking Co. of this city. This is the first installation of this type that has been made in any one of the Kroger stores.

It is open 16 hours, from 7 a. m. to 11 p. m. Twelve waitresses, working in eight-hour shifts, serve an average of 1,200 people daily.

The lower part of the back bar of the luncheonette is chromium plated, the back bar is of Monel metal trimming and panel etched glass, and the front of the counter is of California tile of Spanish-Moorish design.

Twenty-four cane back stools and double dispensing soda fountains are also installed in this luncheonette.

SEEGER-CHICAGO PLACES TWO JOBS

Chicago—Seeger Refrigerator Co. recently supplied a model P-68 refrigerator to the Proviso Township High School for installation in the new cafeteria.

They also supplied Seeger refrigerators with Frigidaire compressors and coils. In the cafeteria of the new Public Service Co. Bldg. at Northbrook, Ill., Seeger refrigerators using Frigidaire equipment were installed.

Installation was made by Duparquet, Huot & Moneuse, who had the complete kitchen contract.

REPORT INDICATES INCREASE IN ORANGE SHIPMENTS

Florida—The total number of oranges, including tangerines, which will be shipped from Florida during the 1930-31 season will be 14,500,000 boxes, against 7,900,000 for 1929-30, according to a report made by the U. S. Department of Agriculture recently. This is an increase of 83.5% over last season.

The total shipments of grapefruit will be 10,000,000 boxes, against 6,300,000 during 1929-30, an increase of 58.7%, the department estimates.

SUBSTITUTE FOR FRESH CREAM DEVELOPED

Washington, D. C.—The Department of Agriculture reports that a substitute for fresh cream is being manufactured by four Danish companies.

It consists of milk blended into an emulsion with a percentage of fine edible vegetable oil which corresponds with the fatty content of ordinary cream. It is being marketed both at home and abroad.

STRAUSS PLANS BIG FOOD SHOP IN N. Y. SUBURB

Jamaica, L. I.—The new Montgomery, Ward store of this city has recently leased to Nathan Strauss, Inc., 3,800 sq. ft. of floor space for a general food department.

Strauss Markets will also be opened at Worcester, Mass., and New Britain, Conn.

Refrigerators need more than shelf space . . .

and

GOOD INSULATION *needs more than* "LOW CONDUCTIVITY"

"LOW conductivity" *is* important in insulation. But it isn't everything by a great deal. Efficiency depends on many more things than just the ability to resist the passage of heat.

Moisture resistance is important, too. In fact, it's vital, for if the material absorbs moisture readily, its conductivity won't stay low for very long. It will rot and have to be replaced long before the normal life of good insulation.

How about strength? There's another important feature. The box you build is subject to vibration from slamming doors. If there's any chance for the insulating material to settle from these jars and leave a gap at the top of the wall, what good is low conductivity in the insulation that's left?

The safest way is to consider *all factors when you buy insulation. Choose a material that measures up to all standards—as Armstrong's Type LK Corkboard does.**

Type LK Corkboard has low conductivity. It does resist moisture—who ever saw a waterlogged cork? It is rigid. It is easily worked for any installation. And it is backed by the reputation of the company that has made Armstrong's Corkboard, the standard insulation for refrigeration for more than thirty years.

We will gladly send you samples of Armstrong's Type LK Corkboard for your own tests. And Armstrong offers, without obligation, to help you solve your insulation problems. Address Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster Pa.

~ ~ ~

AT YOUR SERVICE

Twenty-eight Armstrong Cork & Insulation Company branches at the following cities are ready to serve you. See Telephone Directory for street address of the branch office nearest you.

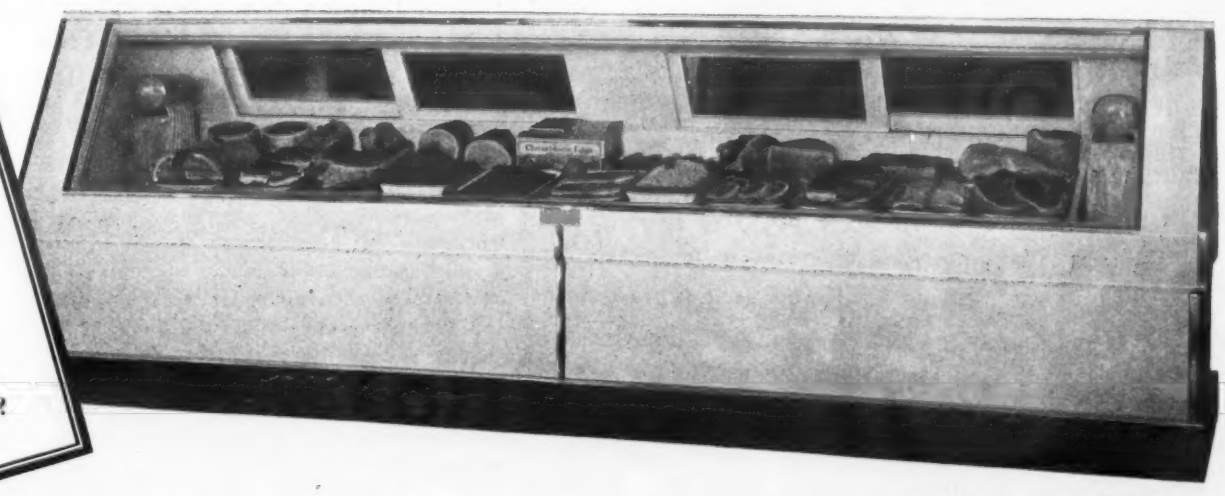
Albany, N. Y.; Atlanta, Ga.; Birmingham, Ala.; Boston, Mass.; Buffalo, N. Y.; Charlotte, N. C.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dallas, Tex.; Denver, Colo.; Detroit, Mich.; Grand Rapids, Mich.; Houston, Tex.; Jacksonville, Fla.; Kansas City, Mo.; Memphis, Tenn.; Milwaukee, Wisc.; Minneapolis, Minn.; New York, N. Y.; Omaha, Neb.; Pittsburgh, Pa.; Rochester, N. Y.; St. Louis, Mo.; Syracuse, N. Y.; and in Canada—Montreal, Toronto, Winnipeg.

Armstrong representatives are located in the following cities: Baltimore, Md., John R. Livezey; Los Angeles, Cal., Gay Engineering Corporation; New Orleans, La., H. T. Steffee; Philadelphia, Pa., John R. Livezey; Spokane, Wash., D. E. Fryer & Company; Portland, Ore., Gillen-Cole Company; San Francisco, Cal., Van Fleet-Freear Company; Seattle, Wash., D. E. Fryer & Company; Washington, D. C., John R. Livezey.

Armstrong's (A) *Product*

★ *Star these 6 questions when you buy insulation:*

★ Is it an efficient barrier to heat?
★ Will it resist moisture?
★ Will it serve without warping, shrinking, buckling, or settling?
★ Will it resist decay and deterioration?
★ Has it structural strength?
★ Is it permanently reliable?



This VIKING DISPLAY COUNTER, *manufactured by Viking Refrigerators, Inc., Kansas City, Mo., is heavily insulated with Armstrong's Corkboard. This case is especially adapted for holding low temperatures—and it also has all the other advantages that cork insulation gives.*

Armstrong's TYPE LK Corkboard Insulation

Efficient and Practical Insulation for Refrigerating Equipment

REFRIGERATED FOOD SECTION
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Food Research

SO closely are the problems and interests of manufacturers and distributors of refrigeration equipment related to those of perishable food that a well-defined community of interest exists between the two industries.

Obviously, a knowledge of refrigeration is all-important to perishable food merchandising. Still more obviously, a knowledge of perishable foods is important to the refrigeration industry, inasmuch as refrigeration lives and has its being largely for the sake of the preservation of perishables.

In the electric refrigeration industry may be found a supply of good engineering talent and scientific information. Given a set of conditions to meet, a series of requirements or tests, engineers can produce the equipment desired in due process of time and experimentation.

Less plentiful is a knowledge of the *applications* to which refrigeration principles can be put, of the *foods* which need refrigeration. Upon a broad understanding of food preservation, and upon a penetrating study into the means of applying this knowledge, will largely depend the future progress of the refrigeration industry.

Quick-Freezing Problem

In the quick-freezing industry, for instance, the problem of the day is not the construction of quick-freezing systems. What perplexes the producers of sharp-frozen products most is the foods they are subjecting to their processes.

There is a vast store of information yet to be unlocked concerning the nature of meats, vegetables, and fruits, and their reactions to the sudden application of low temperatures. The selection of the foods to be frozen is a large factor in the ultimate success of the product.

Knowledge of this nature concerning the vegetable kingdom is particularly inadequate. Producers are still attempting to discover what varieties of peas lend themselves most readily to quick-freezing, what grades of corn-on-the-cob can successfully be subjected to low temperatures without sacrifice of flavor and tenderness, and the manner of applying sharp-chilling methods to so aqueous a vegetable as a tomato.

At first the industry was confident that quick-frozen foods could be kept indefinitely without deterioration. It has since been learned that dehydration and desication are factors to be reckoned with, and that a great deal can happen to food between the time of freezing and its ultimate consumption. Not only must the raw foods be carefully selected, but the most scientific methods of packing, storage, and transportation must be adopted.

Further Enlightenment

Quick-frozen foods have focussed attention upon food preservation because radical temperatures are dealt with, and because a brand new set of problems have suddenly appeared. It is not at all improbable that further study of the refrigeration of unfrozen foods might prove enlightening. Many food retailers have been prone to take refrigeration for granted, and to accept spoilage losses as unavoidable.

Profitably, we think, could the refrigeration industry go to the food packers to gather a more comprehensive knowledge of needs and requirements of perishable food. For many years the packers have been heavy users of industrial refrigerating equipment, and it is entirely likely that they know more about refrigeration than the comparatively young electric refrigeration industry knows about food.

Cooperation With Packers

Moreover, co-operation with the electric refrigeration industry in studying refrigerated food problems should be profitable for the packers. To a large extent the distribution limits of perishable foods depend upon the development of first-class refrigeration storage and display equipment. And by assisting in the education of the electric refrigeration industry, packers may secure the full benefit of the industry's tremendous advertising efforts and aggressive specialty selling activities.

The first presentation of food appeal in refrigeration advertising consisted almost entirely of references to "dainty frozen delicacies." The adoption of the "50 degrees is the danger line" idea in a coöperative advertising campaign was the next step. Although succeeding in centering public attention upon the connection between electric refrigeration and health, this campaign aroused such heated arguments between electric refrigeration proponents and the ice interests that the idea has almost died of neglect—chiefly because sufficient facts were not available for anyone to prove much about the subject.

Research Methods

When more facts about food preservation are made available, food should become the topic of electric refrigeration advertising and sales presentations.

Many means of gaining this knowledge are available. Fellowships may be established in colleges and universities, with graduate students being assigned definite refrigerated food problems to solve. The extensive facilities of the research laboratories possessed by some of the large corporations in both the refrigeration and packing industries may be placed at the disposal of those seeking food preservation knowledge. Still other means of getting at the facts may be adopted.

Whatever the method, coöperation between the packing and refrigeration industries in the attempt to answer some of the moot questions of food refrigeration should be mutually profitable, and should result in greatly increased opportunities for public service.

GLEANINGS
FROM RECENT PERIODICALS

"Should the packer or the retailer provide equipment for merchandising packaged pre-cut meats, fresh or frozen? The advantages of packer controlled equipment are: Retail outlets closed to competition, steady outlet, ability to build brand demand, lower sales expense, economies from cutting at the plant estimated at 10 per cent, ability to spot demand for different grades and cuts, ability to feature long profit items. The disadvantages are: The cost of equipment, which will average $1,000 per outlet, with charges for interest, depreciation, changes, service, taxes, insurance and other expenses averaging $275 annually per outlet. With an average sale per outlet of $150 per week, it is reasonable to assume that the packers' total profit would be not less than $30 per outlet per week."—G. R. Lindahl, *National Provisioner.*

"Frozen fruit juice, of course, must be distributed under refrigeration, and used shortly after thawing. To reduce change in flavor during thawing to a minimum, frozen juice should not be completely thawed out when it is repacked for retail distribution.

"Recently a cylindrical freezer has been developed which freezes the juice in flakes, these being compressed into cakes of suitable size—and frozen directly in brick form in another type of freezer. Bricks of juice are then wrapped in an air-tight and liquid-tight container for distribution to the consumer."—M. A. Joslyn and G. L. March, *Food Industries.*

An Editor on Wheels
Stories of Interesting PLACES in the Refrigeration Industry
By GEORGE F. TAUBENECK

Indianapolis, Ind.

Most large cities have access to a sizable body of water. Indianapolis hasn't. It has grown up in spite of the fact that water transportation has not been available.

During the days when so many cities attained importance because of shipping facilities, Indianapolis began to spread its wings in the center of a great agricultural region.

Because of the steady influx of farm produce into Indianapolis, it rapidly became a railroad center; and because of its excellent rail transportation facilities, it is sometimes called "the inland seaport."

Situated on flat soil, the city radiates from a hub called, "the Circle," in a style somewhat similar to Washington, D. C.

"The Circle" is a loop street built around a tall Soldiers' and Sailors' monument, which sticks up above its surroundings like a ship's mast.

Remarkable indeed is the amount of space in the center of town given over to public buildings.

There is, for instance, the Capitol building, an ornate affair modeled after the architectural pattern so popular in late 19th century governmental buildings.

Even more impressive are the three squares of edifices and projected edifices comprising the Indiana state memorial to native sons who died in the recent World War.

This group of buildings includes an obelisk, a miniature Erectheum—within which is the national headquarters of the American Legion, and an impressive foursquare memorial building, the design of which was inspired by the tomb of Mausolus (from which we get the word "mausoleum"). Parade grounds, well landscaped, are also a part of the layout.

Greek columns decorate the front of many business buildings. An abundance of Indiana limestone, which is quarried not far from Indianapolis, is to be seen on all sides.

Far out at one edge of the city is another group of extraordinarily handsome buildings. This set of structures belongs to Butler University.

Butler is an old institution. Its academic standards are said to be high, and its athletic teams occasionally achieve national repute.

For many years this school was housed in a group of nondescript old brick buildings which had been standing for decades. With one magnificent, sweeping movement, the entire university moved to a brand new campus.

All the buildings were constructed simultaneously, and — unlike most educational institutions—all the buildings match.

Moreover, fraternities, sororities, and clubs all built new houses on this new campus at the same time. Architecturally, Butler has few rivals in the collegiate world.

Although any number of thriving industries are in operation in Indianapolis, two industries are outstanding: automobiles and meat packing.

The latter industry was a natural outgrowth of the position of Indianapolis as a transportation center in the midst of a large agricultural area.

Slaughtering and packing houses developed in Indianapolis contemporaneously with, if not in such robust manner, as those in Chicago and Kansas City.

Automobiles are not produced in large quantities in Indianapolis, but this inland city is a center of considerable activity in the automotive field.

Annually on Memorial Day is held a 500-mile automobile race over a two-and-one-half-mile brick oval track here.

Automotive engineers throughout the industry watch the outcome of that race very closely, for it is on the results of that gruelling test that many decisions are made as to the trend in internal combustion engine design.

Not only engines, but tires and other accessories and equipment are tested in this race. It is said to have had considerable influence in the shaping of the course and progress of the automobile industry.

Most American cars, from Ford to Dusenberg, are usually represented in the race, and many foreign "mounts" are also driven.

Duesenberg automobiles, the most expensive of American cars, are made in Indianapolis under the Cord regime. The factory is highly distinctive. It has a very low production capacity, and not a great deal of machinery.

The workmen are not skilled laborers, but engineers. Many of them work in white silk shirts in the summer! The whole factory is run on an individualistic, rather than a line production, basis.

Delicate workmanship and a great deal of "tuning," require the talents of trained men who are expert with their hands.

The "Indianapolis races" interest a great many persons other than automotive engineers. Like the Kentucky Derby, a heavyweight championship, and the World's Series, it has long been considered one of the prime spectacles of the year.

Thousands of fans make the pilgrimage to Indianapolis annually for this race. They drive all night, wait in line for hours outside the gates in the morning, and then sit through several more hours of the race.

Almost everyone driving to the race thinks he is Billy Arnold or Barney Oldfield, and there are more races per mile of highway on the night before the race than there were Predicters of Prosperity per luncheon club meeting in 1930.

Still another noted annual attraction in Indianapolis is the state high school basketball tournament.

Year in and year out, the best basketball in America is played at these tournaments.

Few college teams surpass the quintets which come up from all corners of this great basketball state to match long shots, pivots, and dribbles with each other, and few college games even approach these for spirited playing and genuine thrills.

This tournament also draws thousands of spectators each year — for three crowded days of the cage sport.

In addition to being a center of transportation, automobile designing, meat packing, and basketball, Indianapolis is something of a midwestern literary center.

It has had, of course, the beloved James Whitcomb Riley, the poetical celebrator of the "Ole Swimmin' Hole," "Little Orphant Annie," and other homely subjects.

The city now boasts Booth Tarkington, the dean of American novelists, and Meredith Nicholson, another fashioner of novels.

Gen. Lew Wallace, who wrote "Ben Hur," was an Indianapolis product. George Ade, humorist and author of "Fables in Slang," lives on his farm further downstate, but can often be found among old cronies in Indianapolis.

Two of the most respected newspaper editors in the country, Hilton U. Brown and James L. Stewart, have long been a part of the Indianapolis scene.

And there are others.

In spirit Indianapolis is typically of the prairies. Open-handed friendliness and unsuspicious natures are everywhere to be found. Nothing pretentious. Just folks.

A PAGE FOR HOME SERVICE WOMEN

WOMEN INTERESTED IN NEW ACCESSORIES

By Helene F. Foster
Home Service Institute
Philip H. Harrison & Co.

THE electric refrigerator has become a modern necessity. It is a recognized requirement of the new home, and stands foremost on the list of future purchases for the older homes not yet equipped.

Following close upon its heels, a new and interesting demand appears, that of refrigerator accessories. The new owner of an electric refrigerator finds that the old bowls and pans, which were satisfactory for use in the icebox, are not worthy of the new product.

Frequently a user says to the refrigerator dealer, "What do you have in the way of storage dishes, and what do I need to use my refrigerator most conveniently and economically?" and the dealer must, if he is wise, give her the added service by carrying for sale such merchandise as will meet her requirements.

Philip H. Harrison & Co., distributor for the General Electric refrigerator, recognized this demand almost two years ago, and have had a very interesting experience in meeting it.

Such questions as these gave us the idea:

Where can I get a dish for keeping celery?

How about rubber trays?

What do you advise for cleaning and polishing the refrigerator?

Have you anything in the way of individual freezing dishes which can also be used for serving?

What do you use for fruit?

These were our leads, and we instituted a new service for our customers.

Manufacturers were sending us samples of their products for some time, and we began to look into the matter thoroughly and to choose those things which we believed were most needed.

After two years, we now carry some 25 items for all sizes of refrigerators, and not infrequently, with the signed order for a refrigerator, we receive a further order for ten dollars' worth of accessories.

These accessories, if well chosen, add a great deal to the convenient use of the refrigerator and also to the sanitation. No accessory is of use unless it can meet the following requirements: it must fill a definite need, must be sanitary, convenient, inexpensive, must stand hard wear, be easy to clean and not easily breakable.

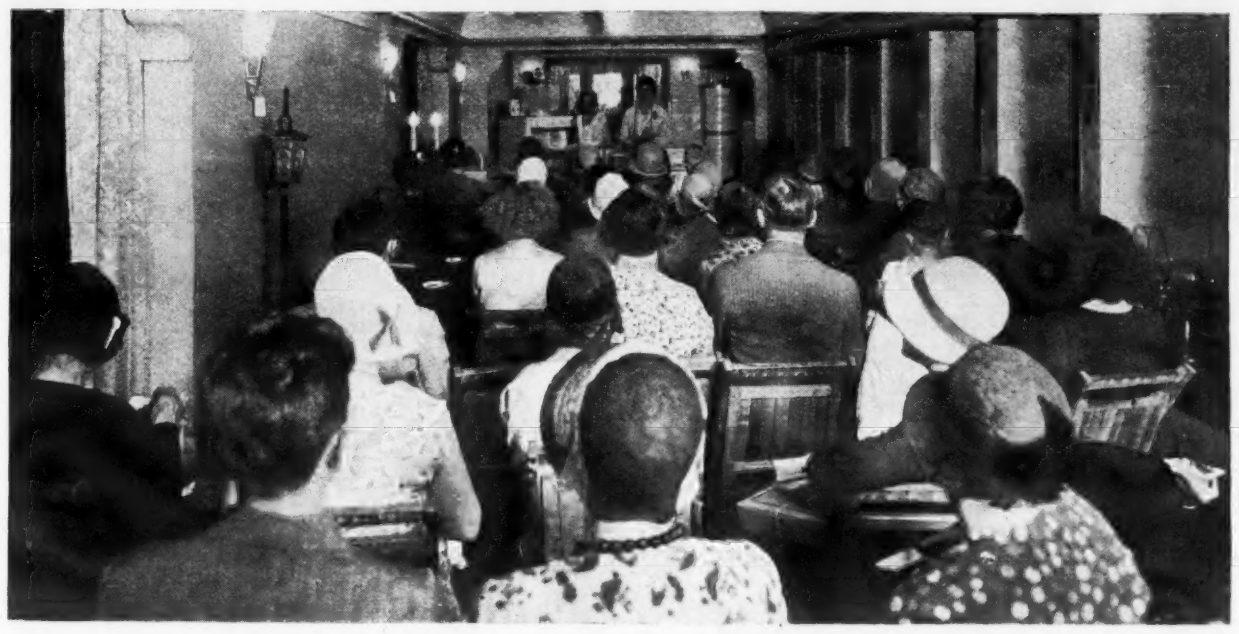
We are now carrying some five vegetable pans from three different manufacturers, two kinds of wire baskets for fruit, eggs or any other foods which do not require covering, a cabinet cleaner, a porcelain cleaner paste, individual cast aluminum moulds for freezing and serving, various sets of nesting dishes for left-overs, both in enamel-ware, and in oven-proof glass, rubber trays for all sizes of refrigerators, moulds for cookies, aluminum cleaning compound for the freezing trays, general utility dishes in enamel-ware, and butter dishes, in addition to standard G. E. replacement equipment.

Inquiries for accessories are increasing constantly and we now find it to our advantage to carry a stock both in the Home Service Institute and on the showroom floor.

The sale of accessories belongs to the Home Service Department, and works in very well with its activities, because the Home Service Director has the opportunity, through her contacts, to present the merchandise. The profits from these sales apply against the department's expenses.

It should, at all times, be recognized that the sale of accessories is subordinate to the sale of refrigerators, and must be organized as an additional service to users.

Frozen Gelatin Deserts Subject at Demonstration



Recent Fort Worth demonstration by the Knox Co. at which a G. E. refrigerator was used.

REFRIGERATORS LEAD AT BRIDGEPORT SHOW

Bridgeport, Conn. — Bridgeport's annual Home Progress Exposition, held March 16-21 at the State Armory, contained one of the largest showings of mechanical refrigeration ever assembled in one hall in Connecticut.

The largest display was that of Allen Brothers, with nine General Electric refrigerators and two water coolers. The cabinets were arranged in a semi-circle and ranged from the smallest domestic model to a big 45 cu. ft. cabinet.

Downes-Smith Co., Frigidaire dealer, exhibited six domestic refrigerators and one water cooler. A single Frigidaire domestic model was also shown by Collins Radio Service, a sub-dealer.

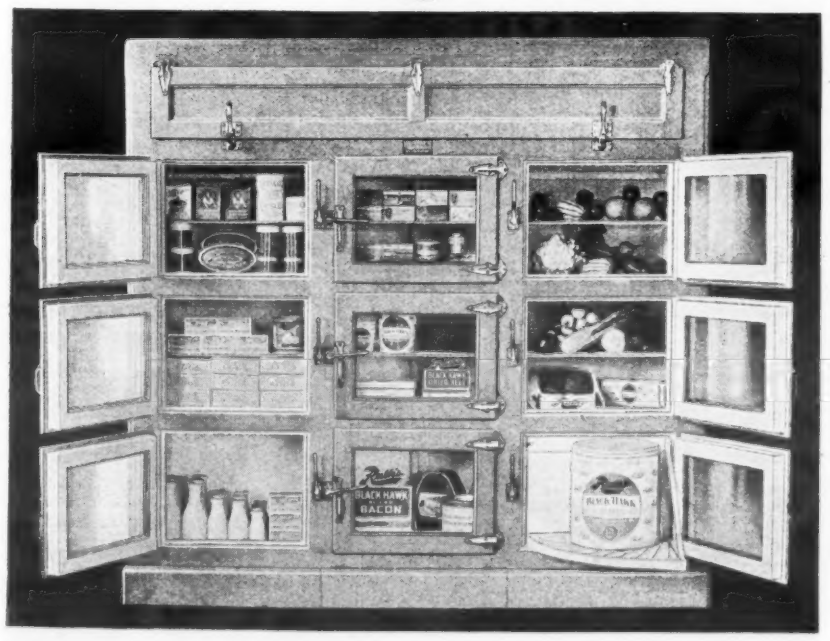
The Modern Electric Equipment Co. had four Copeland refrigerators and one water cooler in its booth, while the Tucker Machine Co., Kelvinator distributor, exhibited five models.

A single Coldspot refrigerator was shown in the Sear-Roebuck display, and three models of the Uniflow Mfg. Co.'s Lectric-Ice were displayed by Schumman & Leahy.

HOME ECONOMIST TALKS TO SOUTHERN WOMEN

Columbia, S. C.—Mrs. Carol Gray Crawford, home economics instructor, recently conducted cooking classes at St. Matthews, Lexington, Leesville, Saluda, Batesburg, Ridgeway, North, Wagener, Johnston, all in South Carolina.

HERRICK QUALITY



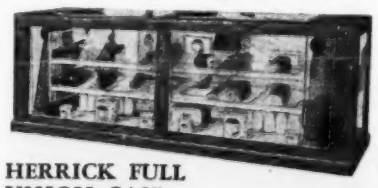
Plus NEW Convenience

Grocers and restaurant owners appreciate the value of good materials and expert workmanship—and acknowledge the HERRICK reputation for these essentials. But they will be more readily interested than ever in these new *Herricks* for overhead refrigeration—the last word for easy handling and complete display.

Standing in front of one of these refrigerators the chef or clerk can reach every shelf, every corner. All working height is available for storage. Heavy tinned wire shelves reach from end to end. There are no partitions. All shelf space is usable.

Herrick positive circulation is assured by air duct at back extending from top to bottom.

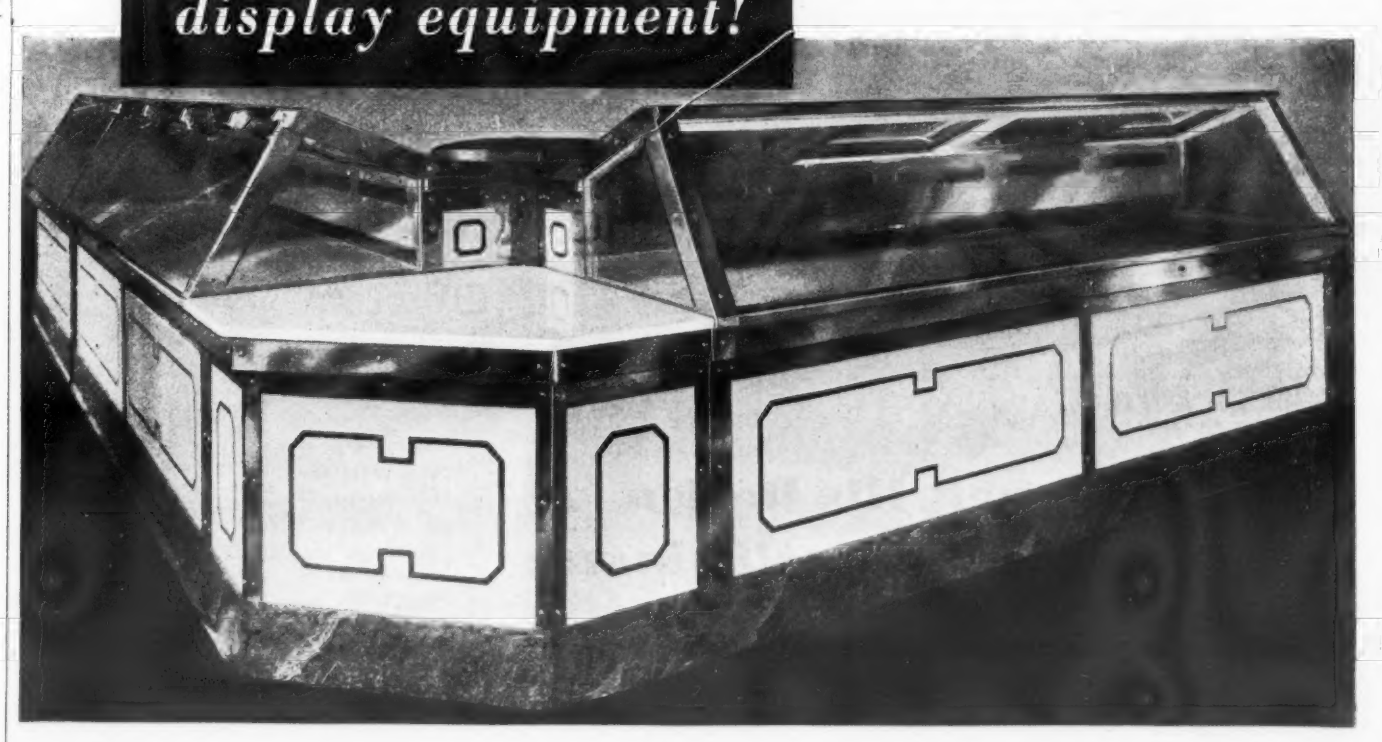
Write for folder illustrating and describing four models now carried in stock.



HERRICK FULL VISION CASE
—a most effective and economic display unit with coils at each end.

HERRICK REFRIGERATOR CO.
1004 RIVER ST., WATERLOO, IOWA

Inside and Out... MONEL METAL *"dresses up" modern display equipment!*



Section of Monel Metal trimmed counter manufactured by CHADWICK & CARR, Boston, for a leading grocery chain store. All metal shown, including the inside back of the case, is Monel Metal.

MANUFACTURERS of display equipment are profiting by their experience with Monel Metal on exterior surfaces. Now they are using it for interior construction, too. Modern display units have Monel Metal trays, shelves and lining as well as Monel Metal trim.

Used inside or outside the case, Monel Metal provides a silvery setting for foodstuffs and increases their natural appeal. The crisp, bright beauty of this Nickel alloy pleases the eye and inspires confidence in the goods displayed. Monel Metal always gives an impression of immaculate cleanliness, because this silvery Nickel alloy is inherently clean and easy to keep clean.

Containing two-thirds Nickel and one-third copper, Monel Metal cannot rust and it is highly resistant to corrosion. It never retains stale odors...but protects perishables against contamination and impairment of flavor. Strong as steel, with no coating to chip or crack, it resists denting and scratching. Monel Metal's beauty lasts throughout the service life of the equipment.

If you are not thoroughly familiar with Monel Metal's remarkable properties, you should send today for additional information.

A HIGH NICKEL ALLOY
MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

FOOD DISTRIBUTION STATISTICS

NINETEEN cities and towns in the state of North Carolina reported food sales totalling 22 per cent of total retail sales made in 1929.

The figures listed by the Department of Commerce in the 1930 Census of Distribution show that in only 5 of the 19 places did the percentage of food sales drop below the 20 per cent mark.

Charlotte topped all of the cities and towns in the list with total food sales of $9,218,567, of which $4,478,353 was reported by the 100 grocery stores with meat departments.

In Winston-Salem the total food sales in 1929 amounted to $6,961,710, or 22 per cent of the retail sales. The 121 groceries reported sales approximating $2,460,581, while the 95 meat markets made sales of $1,708,744.

Winston-Salem had more grocery stores with meat markets than any other of the 18 cities and towns.

Five of the 19 cities mentioned below had more meat markets than grocery stores with meat departments. These cities were: Durham, Elizabeth City, Goldsboro, New Bern, and Rocky Mount.

Food Sales and Outlets in 19 North Carolina Towns and Cities

	food sales	retail sales	Grocery stores with meat departments No.	Grocery stores with meat departments Sales	Meat markets No.	Meat markets Sales
Asheville	$5,184,610	18	57	$2,443,639	16	$1,135,354
Charlotte	9,218,567	19	100	4,478,353	44	1,341,962
Concord	1,859,519	28	18	673,787	5	120,631
Durham	5,293,103	26	64	1,984,469	66	1,272,292
Elizabeth City	1,786,369	28	8	105,178	12	320,933
Fayetteville	1,837,570	25	24	676,227	10	158,469
Gastonia	1,724,517	20	24	942,514	5	159,475
Goldsboro	1,272,518	16	21	427,321	23	291,951
High Point	3,616,272	26	45	1,773,886	36	970,242
Kinston	1,239,830	17	50	874,230	9	86,227
New Bern	1,321,818	23	10	374,568	15	169,103
Raleigh	4,015,379	17	56	1,936,565	28	506,277
Rocky Mount	3,250,394	24	28	951,303	36	967,147
Salisbury	1,658,896	19	22	569,280	12	274,775
Shelby	1,170,680	23	6	417,580	4	146,000
Statesville	1,073,618	20	14	425,485	3	48,700
Wilmington	3,926,760	25	45	1,893,877	13	239,559
Wilson	1,993,549	22	33	955,494	19	548,143
Winston-Salem	6,961,710	22	121	2,460,581	95	1,708,744

INTERESTING food distribution figures reported by the Bureau of Census, U. S. Department of Commerce, in its 1930 Census of Distribution of a number of cities, are summarized by the American Institute of Food Distribution, and shown in the tables below.

Table I shows the 1930 population of each of the cities, the total number of stores selling food products at retail, their total sales, and the part that total makes in the total retail business of the city. The number of restaurants and other eating places is given with the total sales for this group, and the percentage this makes of the total retail volume of the city. Sales and percentage figures cover only food sold through food stores; they do not include food sold through other types of establishments, such as department stores, 10c stores, etc. The average per store, per capita sales in all food stores and per capita sales in eating places are computations based on the census figures.

Table II shows the number of stores in six major types of retail food outlets, their total sales and the computed average sales per store. Where the returns show the number of stores in a city but do not give the total sales, the number of stores is not used in calculating an average.

Table III covers *only* stores classified as grocery or as grocery and meat stores. These figures cannot be used to compute the proportion of total business done by independents and chains, since reports do not break down chain store figures for some cities. Census returns do not give any chain figures for cities of less than 30,000 population.

TABLE I

City	Population (1930)	All Food Stores: Number of Stores	All Food Stores: Total Sales	All Food Stores: % of Sales in Food Stores to Total Retail Sales	Restaurants and Eating Places: Number of Stores	Restaurants and Eating Places: Total Sales	Restaurants and Eating Places: Average Per Store	Restaurants and Eating Places: % of Restaurant Sales to Total Retail Sales	Per Capita Sales: All Food Stores	Per Capita Sales: Eating Places
Evansville, Ind.	102,249	529	$11,976,134	25.25	249	$2,053,015	$ 8,249	4.33	$117	$20
Grand Rap., Mich.	168,592	808	22,755,086	19.54	203	3,336,078	16,434	2.87	135	20
Flint, Mich.	156,492	512	21,423,355	22.67	199	3,828,536	19,239	4.05	137	24
Akron, O.	255,040	1,152	32,616,702	23.37	318	6,145,472	19,325	4.40	128	24
Dayton, O.	200,982	688	24,850,160	20.90	209	4,593,526	21,979	3.86	124	23
South Bend, Ind.	104,193	493	14,471,576	20.90	180	3,075,882	17,088	4.44	139	30
Richmond, Va.	182,929	1,137	22,691,203	22.20	193	3,169,572	16,423	3.09	124	17
Indianapolis, Ind.	364,161	1,757	47,246,271	21.43	584	9,013,618	15,434	4.09	130	25
Cincinnati, O.	451,160	2,918	73,417,578	25.18	591	14,541,201	24,604	4.99	163	32
Fort Wayne, Ind.	114,946	412	15,170,008	20.48	162	3,027,991	18,691	4.09	132	26
Toledo, O.	290,718	1,275	38,203,874	21.95	450	8,227,982	18,284	4.73	131	28
Columbus, O.	290,564	1,242	39,189,393	23.06	397	8,271,467	20,835	4.87	135	28
Total, All Others[1]	2,299,717	11,400	297,044,342	23.49	3,429	43,299,741	12,628	3.42	129	19

TABLE II

City	Grocery: Number of Stores	Grocery: Total Sales	Grocery: Average per Store	Grocery and Meat: Number of Stores	Grocery and Meat: Total Sales	Grocery and Meat: Average per Store	Meat Markets: Number of Stores	Meat Markets: Total Sales	Meat Markets: Average per Store
Evansville, Ind.	129	$2,305,926	$17,875	250	$ 6,349,585	$25,398	55	$1,671,279	$30,387
Grand Rapids, Mich.	347	8,894,486	25,633	132	6,087,124	46,115	153	5,232,769	34,201
Flint, Mich.	132	4,583,927	34,727	278	12,086,020	43,475	61	2,911,916	47,736
Akron, O.	323	9,926,145	30,731	445	12,951,998	29,106	142	5,726,007	40,324
Dayton, O.	44	1,111,634	25,264	401	16,421,956	40,953	45	2,386,960	53,044
South Bend, Ind.	179	4,143,491	23,148	128	3,833,262	29,948	88	3,182,102	36,160
Richmond, Va.	241	5,603,421	23,251	392	8,750,905	22,324	180	3,947,492	21,931
Indianapolis, Ind.	311	10,063,809	32,360	839	23,667,836	28,210	236	6,337,514	26,854
Cincinnati, O.	599	10,667,259	17,808	658	29,032,574	44,122	404	12,190,590	30,175
Fort Wayne, Ind.	60	1,190,653	19,844	231	9,324,763	40,367	47	2,566,024	54,596
Toledo, O.	300	5,857,879	19,526	556	21,784,629	39,181	130	4,949,316	38,072
Columbus, O.	141	3,455,698	24,508	568	23,353,537	41,115	161	3,500,430	21,742
Total, All Others[1]	4,384	87,193,953	19,889	3,677	124,907,394	33,970	1,435	48,177,490	33,573

TABLE II—(Cont'd)

City	Dairy, Eggs and Poultry: Number of Stores	Dairy, Eggs and Poultry: Total Sales	Dairy, Eggs and Poultry: Average per Store	Fruits and Vegetables: Number of Stores	Fruits and Vegetables: Total Sales	Fruits and Vegetables: Average per Store	Delicatessen: Number of Stores	Delicatessen: Total Sales	Delicatessen: Average per Store
Evansville, Ind.	3	*	*	13	$ 84,810	$ 6,524	8	$ 81,166	$10,146
Grand Rapids, Mich.	2	*	*	31	240,239	7,750	*	*	*
Flint, Mich.	4	$ 466,132	$116,533	5	95,893	19,179	2	*	*
Akron, O.	*	*	*	12	282,616	23,551	10	172,625	17,263
Dayton, O.	*	*	*	12	466,754	38,896	24	548,408	22,850
South Bend, Ind.	10	1,448,552	144,855	9	261,550	29,061	4	150,772	37,693
Richmond, Va.	9	901,962	100,218	35	173,695	4,963	7	209,151	29,879
Indianapolis, Ind.	80	4,287,218	53,592	103	695,542	6,753	20	435,439	21,772
Cincinnati, O.	*	*	*	480	2,745,989	5,721	88	1,940,912	22,056
Fort Wayne, Ind.	*	*	*	2	*	*	9	208,442	23,160
Toledo, O.	*	*	*	16	302,260	18,891	5	96,850	19,370
Columbus, O.	24	*	*	69	506,396	7,339	19	337,676	17,772
Total, All Others[1]	54	6,005,300	111,209	234	4,069,893	17,393	48	736,455	15,343

TABLE III

City	Independent Stores: Number of Stores	Independent Stores: Total Sales	Independent Stores: Average per Store	National and Sectional Chains: Number of Stores	National and Sectional Chains: Total Sales	National and Sectional Chains: Average per Store	Local Chains: Number of Stores	Local Chains: Total Sales	Local Chains: Average per Store
Evansville, Ind.	302	$ 5,401,237	$17,885	46	$ 2,286,086	$49,698	31	$ 968,188	$31,232
Grand Rapids, Mich.	284	6,493,649	22,865	142	7,186,104	50,606	53	1,301,857	24,563
Flint, Mich.	291	8,765,529	30,122	81	5,565,217	68,706	38	2,339,201	61,558
Akron, O.	575	12,036,203	20,932	93	6,131,476	65,930	100	4,710,464	47,105
Dayton, O.	284	7,182,433	25,290	136	8,626,575	63,431	25	1,724,582	68,983
South Bend, Ind.	254	4,986,904	19,633	42	2,504,465	59,630	11	485,384	44,126
Richmond, Va.	445	6,799,248	15,279	131	6,353,975	48,504	57	1,201,103	21,072
Indianapolis, Ind.	707	14,517,895	20,535	194	10,125,446	52,193	249	9,088,304	36,499
Cincinnati, O.	791	17,315,518	21,891	336	17,646,108	52,518	130	4,738,207	36,448
Fort Wayne, Ind.	211	6,466,483	30,647	76	3,919,328	51,570	4	129,605	32,401
Toledo, O.	649	14,519,440	22,372	196	12,501,906	63,785	11	621,162	56,469
Columbus, O.	445	12,083,583	27,154	212	12,596,825	59,419	52	2,128,827	40,939
Total, All Others[2]	3,113	56,030,141	17,999	516	33,728,028	65,366	537	23,113,443	43,042

*Not given separately.

†Meaning total of sales by grocery stores plus sales of grocery and meat stores.

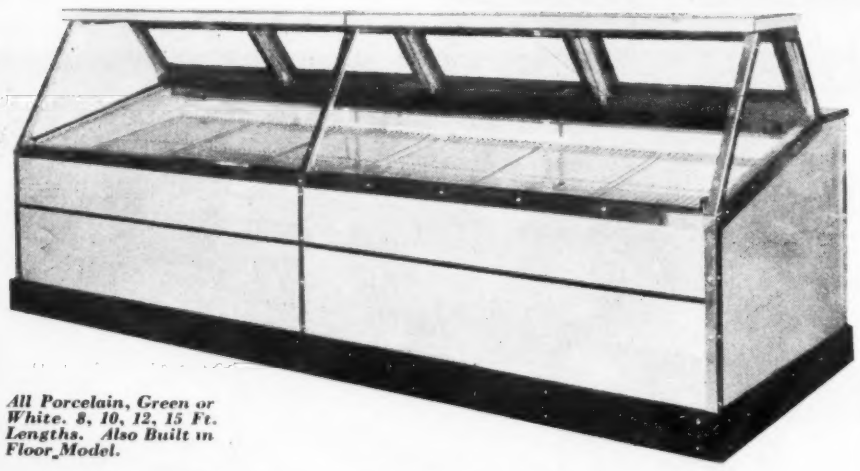
[1]Includes (where figures are reported separately): Albany, Athens, Augusta, Columbus, Decatur, Griffin, Rome, Thomasville and Valdosta, Georgia; Cicero and Joliet, Illinois; Anderson, Elkhart, Goshen, Mishawaka, Muncie, Richmond, Terre Haute and Whiting, Indiana; Annapolis, Frederick and Salisbury, Maryland; Battle Creek, Bay City, Dearborn, Ecorse, Ferndale, Jackson, Kalamazoo, Muskegon Heights, Pontiac, Port Huron and Wyandotte, Michigan; Asheville, Charlotte, Concord, Durham, Elizabeth City, Fayetteville, Goldsboro, Greensboro, High Point, Kinston, Raleigh, Salisbury, Statesville, Wilmington and Wilson, North Carolina; Chillicothe, Hamilton, Marion, Middletown, Portsmouth, Springfield, Warren and Zanesville, Ohio; Columbia and Greenwood, South Carolina; Provo, Utah; Alexandria, Charlottesville, Danville, Hopewell, Newport News, Petersburg, Staunton and Winchester, Virginia; Appleton, Cudahy, Fond du Lac, Green Bay, Marinette, Racine, Shorewood, Superior and Wausau, Wisconsin.

[2]Includes (where figures are reported separately): Augusta and Columbus, Georgia; Anderson, Muncie, Richmond and Terre Haute, Indiana; Battle Creek, Bay City, Dearborn, Jackson, Kalamazoo, Pontiac and Port Huron, Michigan; Asheville, Charlotte, Durham, Greensboro and High Point, North Carolina; Marion, Springfield, Warren and Zanesville, Ohio; Columbia, South Carolina; Racine, Wisconsin.

A "CHILLY BOY"

Refrigerator Display Counter

is the Best Meat Salesman in America



All Porcelain, Green or White. 8, 10, 12, 15 Ft. Lengths. Also Built in Floor Model.

Through His Design "CHILLY BOY" *eliminates*

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- Fogging, Sweating and Reflections
- Sticky Sliding Doors
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One "CHILLY BOY" User Says:

"Had Enough Left to Buy an Ice Machine"

Dealers—Get the Facts Now

Sanders Butcher Supply Co.

2601 Michigan Avenue, Detroit, Mich.

MILK GOOD PROFIT MAKER FOR GROCERY

MILK is of value to the retail grocery store as a factor in general trade promotion in addition to its possibilities as a profit-maker on its own account, according to results of a special commodity study just completed as a part of the Louisville Grocery Survey.

Milk sales were responsible for a greater than average volume of store traffic in the 26 establishments included in the grocery survey, the report shows.

With less than ½ of one per cent of total inventory investment for all stores in the group, milk produced about 5 per cent by value of total sales but over 8 per cent of the total number of sales, indicating that more than a proportionate number of customers were brought into the stores for the purpose of purchasing milk.

Net profits were realized on their milk trade by a majority of the 22 stores which showed a profit on their total operations. With the unprofitable stores averaged in, milk showed a net loss of about 1 per cent on total sales.

In figuring net profit and loss, however, milk was charged with its proportionate share of proprietor's salary, rent and interest on invested capital. In all but two stores, therefore, it may be said that milk paid its way.

A handicap under which milk labored in returning net profits was found to be the comparatively low average value of sale. The average sale of milk amounted to only 12.2 cents, as compared with 19 cents for all commodities.

Since milk was below average both in gross margin and in average value of sale, general store efficiency in the shape of low total operating expenses was necessary if the milk department was to show a profit. To offset the relatively high labor or movement cost per dollar of sale the more progressive grocers endeavored to place their milk refrigerators where orders could be filled in a minimum time, generally near the wrapping counter with other fast-moving staples.

HILL GROCERY COMPANY ACQUIRES LARGE CHAIN

Birmingham, Ala.—Thirty-two stores of the Rogers Grocery Co. have been recently bought by the Hill Grocery Co. This group now has 195 chain units in Greater Birmingham, and 72 in different towns throughout the state.

Nearly all Rogers stores in Birmingham will be kept in operation in 1931, and plans for further developments are being made.

LETTERS FROM READERS

Live Prospect

Washington, D. C.

Editor:

You have been printing a lot in your paper about these frozen foods, especially meat, which comes already cut into steaks, chops, etc., kept in a refrigerator show case.

I have a real live prospect here in Washington; and so far as I know, there is at present no such outfit here. I would like very much to help this man get a show case and handle these frozen meats, and thus I could get some excellent first hand knowledge, too.

I understand that the show cases are loaned to the shops. Could you let me have the low-down as soon as possible, or tell whoever sells these products to let me know if such a service could be started here?

I would surely appreciate any help, and you may telegraph me collect at the office if you can give me the dope that way any sooner.

MARSHALL T. JONES,
Electrical Equipment Division,
U. S. Department of Commerce.

Answer:

Practically all available information is being published in the Refrigerated Food Section of the NEWS, except in a few cases where we have confidential information regarding developments. In general, the marketing of frozen foods is progressing slowly, due to some engineering problems and problems of policy.

Swift & Co. and the other meat packers are hesitant because of the opposition of butchers who see frozen foods as a threat to their existence. General Foods does not have this burden, and its activity is more aggressive.

There is still much knowledge regarding proper methods of freezing foods, which must be acquired from experience before large scale operations may be undertaken with full confidence. Also there has been much doubt of display case design.

Just recently General Foods and Swift & Co. have approved certain makes of display and storage equipment, but none of the manufacturers are, as yet, making this equipment on any scale. You will find complete discussion of this situation in recent issues of the Refrigerated Food Section.

It remains to be seen whether the food companies will accept the responsibility for financing the purchase of equipment for the retail dealers. No doubt there will be some variation of policy in this regard. So far as we know, none of these food producers are prepared to offer equipment to all-comers.

EDITOR.

Little Knowledge

San Francisco, Calif.

Editor:

In spite of the fact that California produces more fish than any other state, we are as yet without any quick freezing methods. In fact, refrigeration is something that the rank and file of those handling foods have but little knowledge of.

Those who are acquainted with refrigeration of foods and the refrigeration facilities maintained by the up-to-date Atlantic Coast dealers would be rather amused to see the old-fashioned ice boxes in a great many of the so-called better stores on the Pacific Coast.

So far the manufacturers of up-to-date refrigerated showcases have not paid much attention to the possibilities on the Pacific Coast and Western states.

In talking to the officials of some of the chain store systems it has been suggested that they equip their stores with up-to-date refrigeration, in order to increase their fish and meat business—particularly their fish business—but they say that the volume on fish does not warrant the expenditure of the money necessary to put in up-to-date refrigeration.

Of course, the volume of business will not warrant the investment of money in proper refrigeration, because they are not in position to build volume with their present equipment.

Frozen foods need a lot of publicity on the Pacific Coast, for at the present time there is a certain amount of antagonism on the part of the dealers and consumers toward any frozen products.

I believe that a generous distribution of your ELECTRIC REFRIGERATION NEWS will help considerably toward acquainting the trade with what is going on in the way of refrigeration.

AUSTIN M. BENTLEY,
Sales Manager, San Francisco International Fish Co.

SHREVEPORT EQUIPS ALL PUBLIC SCHOOLS

Shreveport, La.—Two new Caddo Parish schools will be equipped with Kelvinator refrigeration, according to H. P. McKean, manager, merchandising department of the Southwestern Gas & Electric Co.

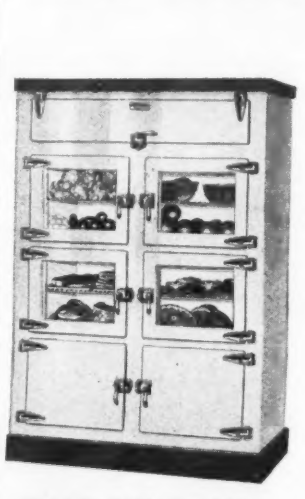
There are eight city schools now equipped with Kelvinators and two others under construction, one at Hosston, a rural town, and another at Jewella, a city suburb, both of which will be supplied with the same type of refrigeration. In addition, Kelvinator equipment is used at the Dodd College, a junior girls' school, and at the Centenary College.

The school equipment has been standardized, consisting of a 12-ft. porcelain cabinet and a 10-gal. per hour water cooler, both operated from a Kelvinator heavy-duty compressor. The investment for each school averages about $750, Mr. McKean said.

BAKERY USES KELVINATOR

Cleveland — Lakeview bakery, Lakeview and Temblett Aves., has been Kelvinator equipped.

Backed by 41 Years Experience

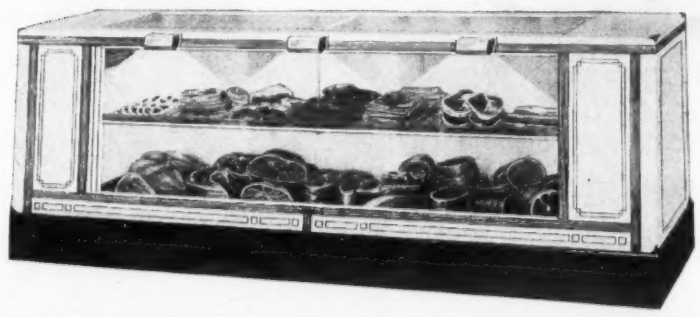


Model No. 8. A display case refrigerator for delicatessen use—has porcelain exterior with Monel metal trim and black base. Display front has three courses plate glass. Ample storage space inside.

Model No. P3110. Exterior, front, top, and ends of white porcelain trimmed in black. Nine-inch black porcelain base. Six-inch walls have four inches corkboard insulation; hardware of nickel-plated bronze.

Model No. P424. Exterior and interior of gleaming white porcelain. Walls four inches thick with three inches pure corkboard. Display doors have three thicknesses glass. Nickel-plated bronze hardware, doors fitted with double gaskets, fasteners of self-closing type. Base and cornice of black porcelain. Shelf space 69.36 square feet, cubic capacity 70.33.

Model No. P425. Porcelain exterior and interior. Walls four inches thick with three inches pure corkboard sealed with hydrolene. Display doors have three thicknesses double strength glass. Nickel-plated bronze hardware with self-closing fasteners. Square feet shelf space 45. Cubic capacity of interior 45.62.



"KNOWING HOW" is the priceless ingredient in any process of manufacture. Into every McCray refrigerator go hidden qualities—the result of 41 years' experience—which make a big difference in service—eliminating spoilage and cutting operation costs.

To the dealer in mechanical refrigeration of any type, this dependable, time-tested service of McCray means more satisfied customers. Regardless of the machine installed, the refrigerator cabinet itself determines the practical working efficiency in operation.

Shown above are several typical McCray cases and cabinets—all constructed to the same high standards of in-built quality—strikingly handsome in appearance and all insulated with pure corkboard sealed with hydrolene.

The McCray line is complete. There are models to meet every need and dealers in machine refrigeration should write now for catalogs and information. *Remember that every McCray model may be used with mechanical refrigeration of any type.*

McCRAY Refrigerator Sales Corporation, Dept. 66, Kendallville, Indiana. Salesrooms in All Principal Cities. *See Telephone Directory.*

ALL McCRAY MODELS MAY BE USED WITH MECHANICAL REFRIGERATION OF ANY TYPE

McCRAY REFRIGERATORS

TO HELP YOU MAKE MORE SALES

If you are a manufacturer, distributor, or dealer, you can use the *Refrigerated Food Section* as a definite aid in the promotion of commercial sales. Simply see that it reaches your commercial prospects.

In the *Refrigerated Food Section* will be found news and information of interest to meat merchants and grocers, chain store executives, ice cream manufacturers, druggists, confectioners, restaurant owners, and all food service establishments.

Your prospects will be better informed on the advantages of up-to-date refrigeration equipment by reading the *Refrigerated Food Section.*

Use the blank below to order extra copies for distribution by your salesmen. Or send to ELECTRIC REFRIGERATION NEWS the names of companies to which you would like to have sample copies sent.—Editor.

Order *for* Refrigerated Food Section

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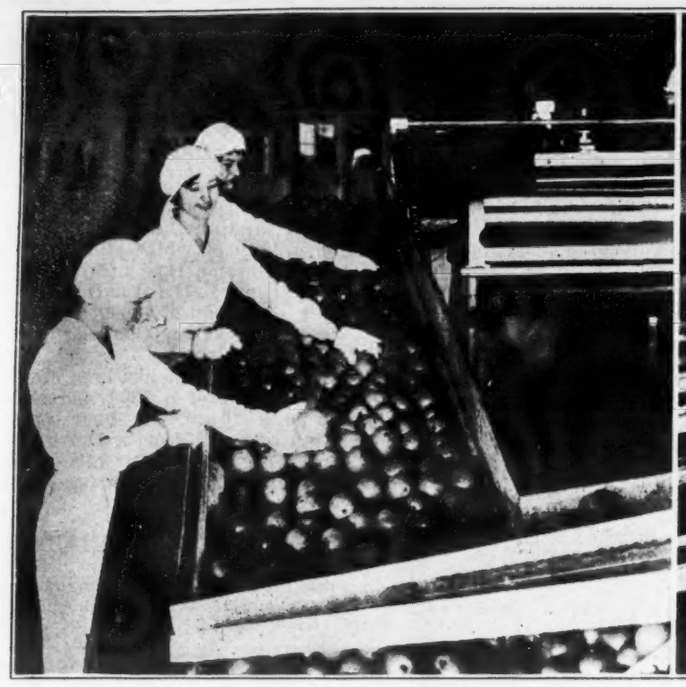
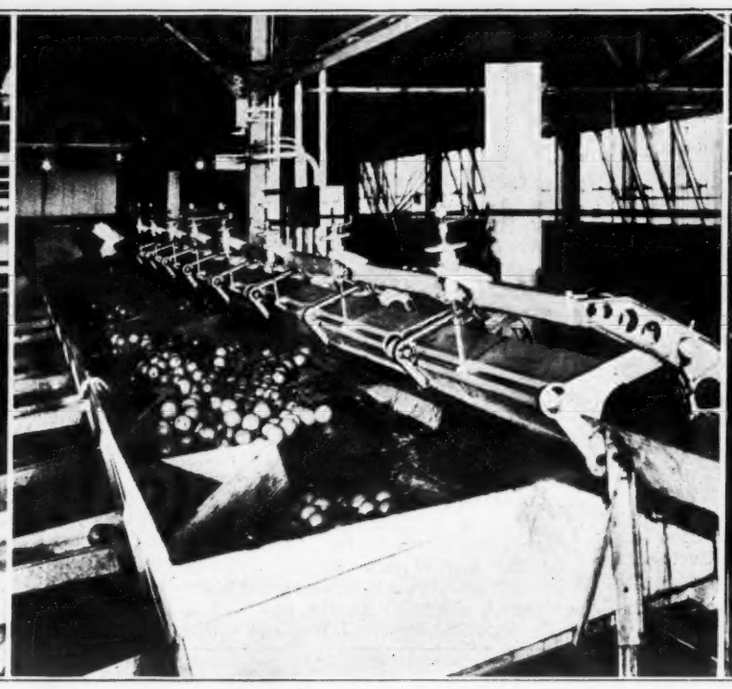
4-8-31

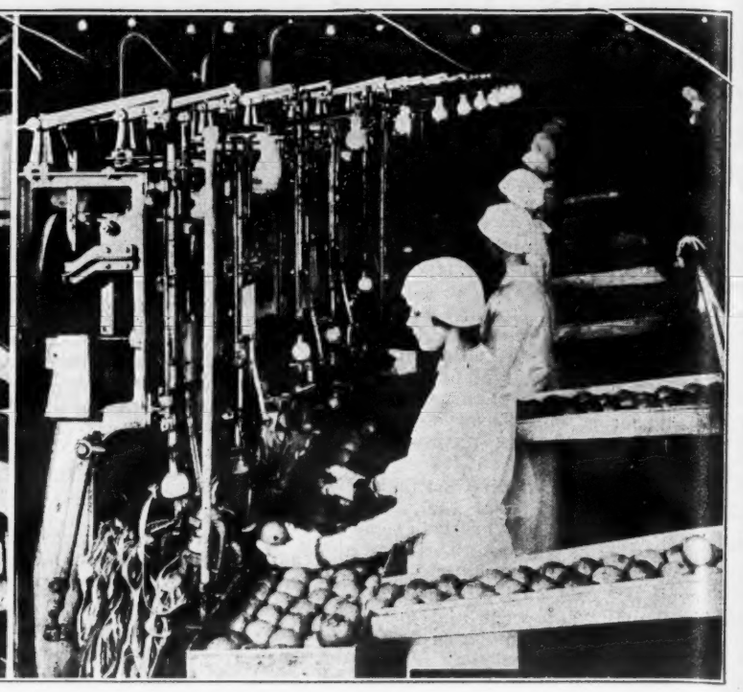
FREEZING ORANGE JUICE AT TAMPA, FLA.



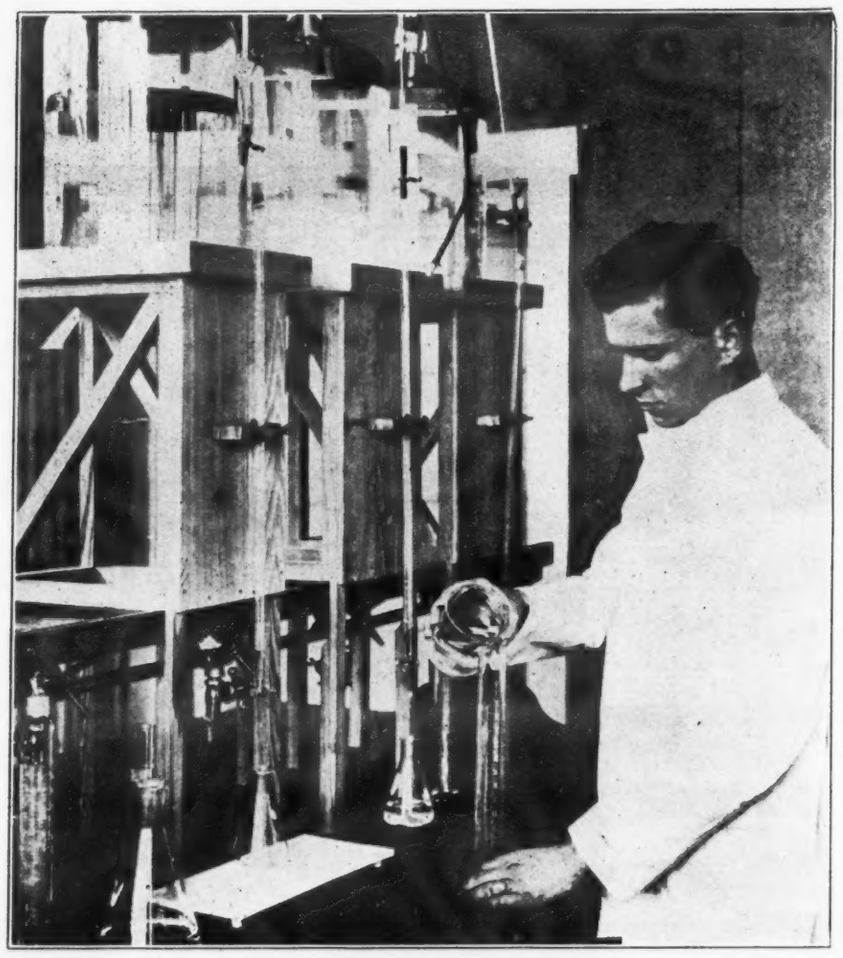
Grading elevator in the plant of National Juice Corp., where the culls are discarded.



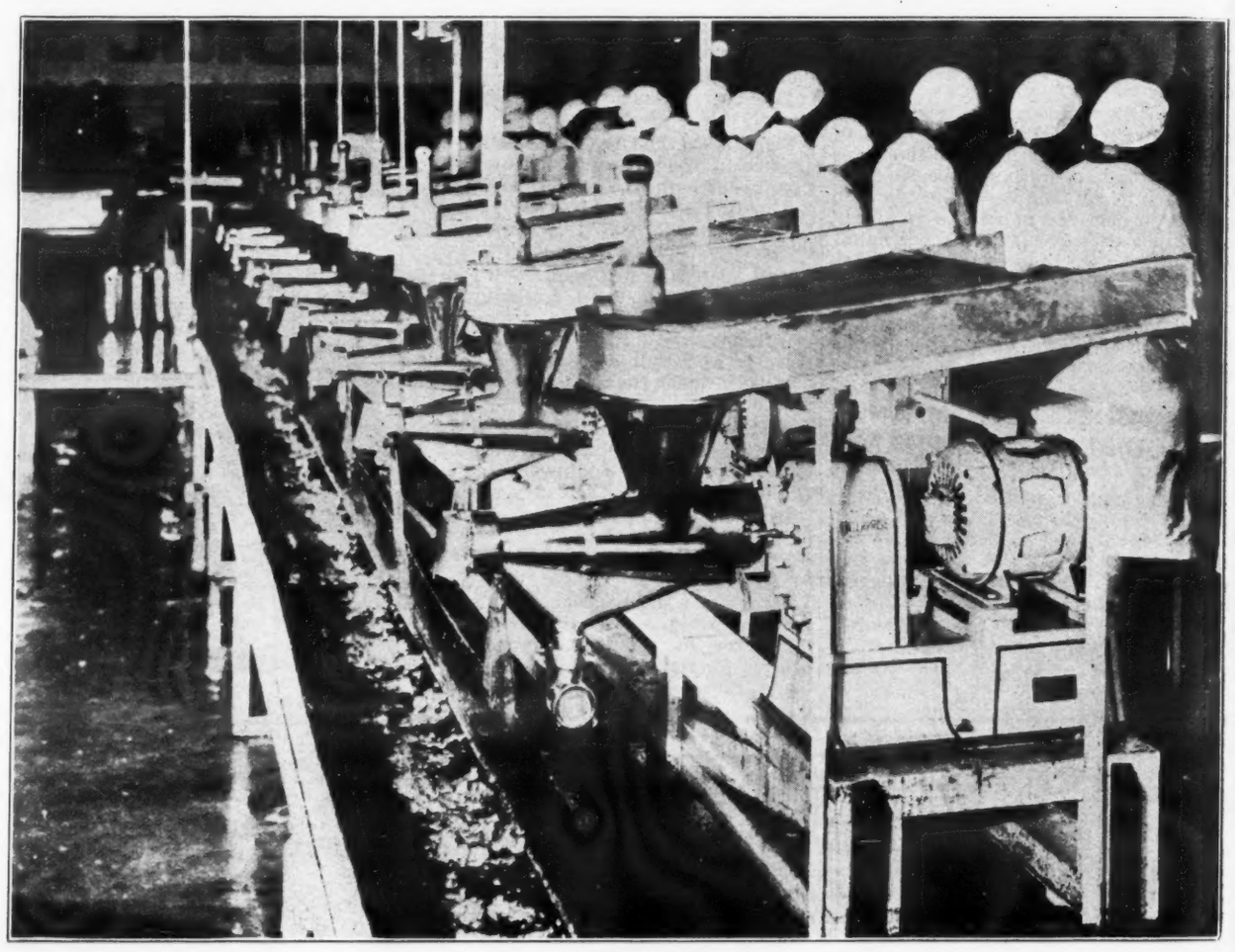
Automatic sizer which drops oranges of similar size in channels leading to the peeling machines.



Battery of twenty-four Coons peelers operated by a competent staff of young women employes.



In the laboratory where tests of freezing methods and types of containers are being conducted by National Juice Corp.



Expressors, which press the juice from the orange, separating at the same time the seeds and pulp. After being filtered, the juice is pumped to the Grayson system, which freezes it into a slush.

Filling machine using an exhaust reservoir, which fills 120 cups per minute. The orange juice at this stage is still in the slush form. From here the cups are passed to the sealing machines.

Sealing the cups completes the operation, and they are then sent to the sharp freezer, which is kept 10° F. below zero.

Air Conditioning Number

Engineering Section

In Three Parts
Part 3

ELECTRIC REFRIGERATION NEWS

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The business newspaper of the refrigeration industry

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TWO DOLLARS PER YEAR

SMALL MACHINE BEING USED FOR AIR CONDITIONING

Offices, Butcher Shops, Banks, Industrial Plants Employ Small Units

By L. K. Wright
Member A. S. R. E., N. A. P. R. E.

IT is only very recently that attention has been given to the control of air conditions, other than mere temperature reduction, as employed in commodity cold storage rooms. A number of large air attempering plants, suitable to the enormous loads imposed through the conditioning of theatre, auditorium and hospital atmospheres, have been installed and operated with entire satisfaction.

The small machine unit, however, has not been utilized to any great extent for the tempering of air to be used solely for human comfort, but with the realization of the results obtained by the large plants the small unit air conditioner will, in all probability, be more commonly used.

The initial monetary outlay for a small plant is moderate, and the operating costs are such that it makes the small unit of particular interest for use in hospitals, bank vaults, fur and egg storage rooms, cigar, cigarette, chocolate, candy and bread factories of small or moderate size.

Homes and offices may also be equipped so that the occupants are maintained in comfort, regardless of outdoor conditions. Small units may be used in mines to relay and retreat the air so that safer and better working conditions are maintained, even in narrow dead end working faces.

The ever increasing damage wrought by impure air, generally through pollution due to smoke particles in suspension, has begun to create a demand for clean, treated air. There is just as imperative a need for pure air as there is for pure food and pure water.

Small conditioning units may be utilized in hospitals for the attempering of individual rooms, such as the operating and patients' bedrooms; and in very warm, humid localities presents a most efficacious panacea for most ills and fevers, in that the ailing persons are maintained in proper comfort under restful temperature and controlled humidity conditions.

The air admitted to the rooms is thoroughly purified and in a clean state, completely denuded of all germ and bacterial life that is found floating in ordinary atmospheres. These minute germs and spores cause much grief when they enter wounds, causing suppuration, and if breathed they are productive of low vitality and hinder recovery of the patient.

A simple method of determining the

(Concluded on Page 12, Column 3)

TWO ENGINEERING GROUPS TO MEET AT CLEVELAND

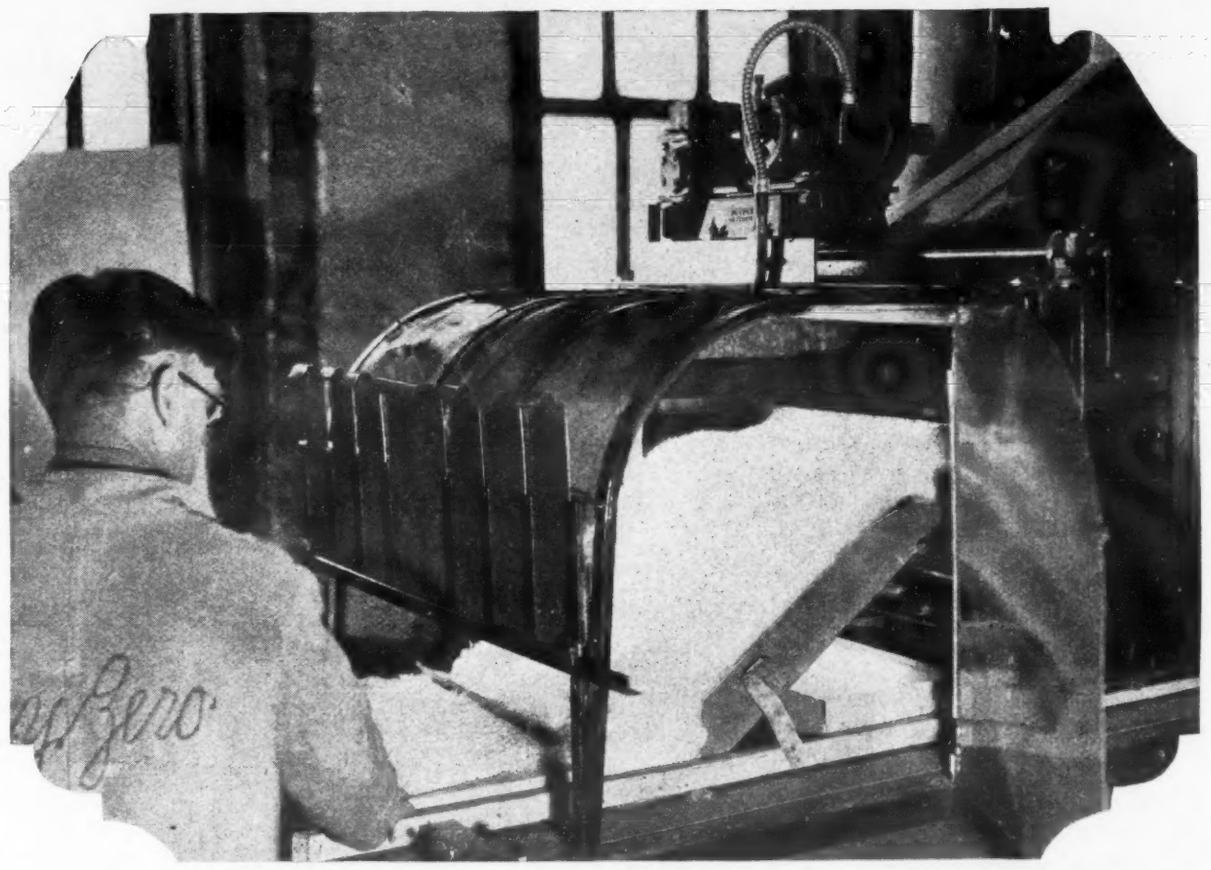
Cleveland — Industrial management, maintenance, and materials handling will be considered in the fourth national meeting of the materials handling division of the American Society of Mechanical Engineers and the second National Industrial Congress, sponsored by the A. S. M. E., the Society of Industrial Engineers, and the American Management Association, in the Cleveland Public Auditorium, April 13, 14, 15, 16 and 17.

The week will be divided into three kinds of activity: talks by men familiar with industrial operations, inspection trips to Cleveland factories, and an exhibit of many kinds of industrial equipment.

WEAVER BROS. CO. MERGE WITH H. J. BOWIE & CO.

Cleveland—Weaver Bros. Co. has merged with H. J. Bowie & Co., according to an announcement recently made. Weaver Bros. are manufacturers of pickling equipment and supplies.

Delivery of Grained Fibre for Slab Insulation



Automatic fibre graining and forming machine of the Dry-Zero plant in Chicago

A.S.R.E. CONVENTION SPEAKERS NAMED

New York City—Speakers and the subjects which they will discuss at the 18th annual spring meeting of the American Society of Refrigerating Engineers, which will be held May 6, 7 and 8 in Kansas City, have been announced by the officers of the Society. Headquarters and meetings will be at the Kansas City Athletic Club.

The first session of the convention will be held at 10 a. m., Wednesday, May 6, on new industrial applications of refrigeration. Alvin H. Baer, president of the society, will preside and introduce the following men to discuss the subjects listed:

Maurice Olchoff, Natkin Engineering Co., Kansas City, "Refrigeration in Air Conditioning."

H. H. Pruitt, Texas Pacific Oil Co., Fort Worth, Texas, "Refrigeration Requirements for Oil Refining."

R. H. Tait, past president of the A. S. R. E. and consulting engineer in St.

(Concluded on Page 4, Column 4)

$$E = \frac{MV^2}{2}$$

Apropos of the question "Why have we had a depression when money is so plentiful?" Louis Ruthenberg, president of Copeland, says: "Economics is a study in dynamics—not statics. There must be velocity as well as mass to produce energy. There must be turnover as well as money to achieve prosperity."

Detroit A.S.R.E. Section To Hear Weil

Detroit—Daniel D. Weil of the American Radiator Co. will address the next meeting of the Detroit Section of the American Society of Refrigerating Engineers on "New Developments in Dry System Cooling Units." The meeting will be held, April 20, in the Cadillac Athletic Club, Lafayette and First St. Dinner will start at 6:30 p. m. and the meeting at 8 p. m.

CARRIER FURNISHING SMALL OFFICE UNIT

Detroit—Conditioning air for human comfort is the job of the atmospheric cabinet manufactured by the Carrier-York Corp., and used in Detroit offices, barber shops, and retail stores.

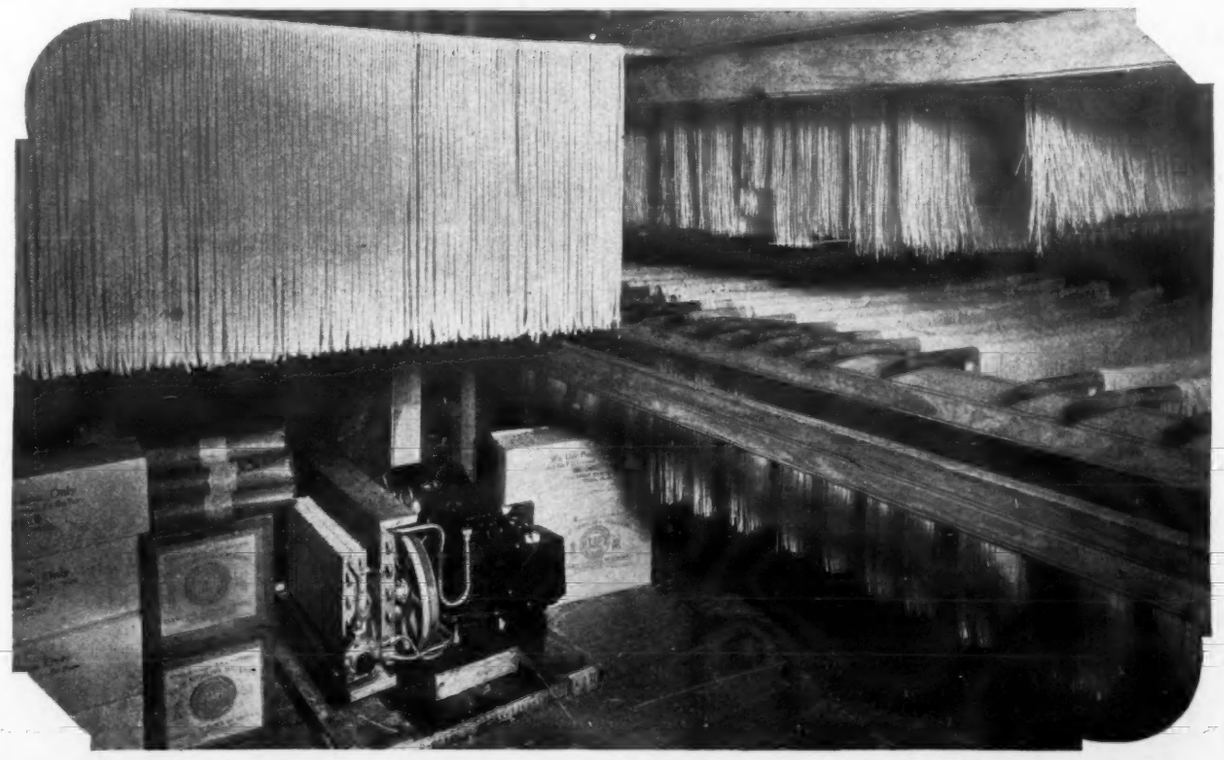
The conditioning unit is housed in a metal one-piece cabinet 30 in. high, 38 in. wide, and 11⅝ in. deep. It is finished in baked enamel resembling grained walnut, and is designed to replace a radiator. The cabinet may be slipped off the cooling assembly for inspection.

Horizontal steam coils are included for heating in the winter, another bank of finned coils provides cooling by methyl chloride or cold water in the summer, and a centrifugal fan in the lower portion of the cabinet circulates air into the room. When the customer wishes, the cooling feature is omitted. When refrigeration is used, the compressor unit is usually installed in a nearby room, or in the basement.

Humidification is accomplished in winter by a pan of exposed water through

(Concluded on Page 5, Column 1)

Conditioning Air in Macaroni Manufacture



Frigidaire dehumidifier installed in the macaroni factory of Fraterrigo & Gullo, Tampa, Fla.

FAST OPERATIONS MARK DRY-ZERO PRODUCTION LINE

Pliable Slab Insulation Made By Specially-Designed Machinery

By John T. Schaefer

Chicago—The fabrication of insulation slabs is a high-speed process, requiring the nimble fingers of many girls, and the fast and accurate operation of men attendants of the specially designed machinery in the factory of the Dry-Zero Corp. in this city.

The day a representative of the ELECTRIC REFRIGERATION NEWS visited the plant, two parallel production lines were going full force, and completed 7,963 refrigeration insulator slabs in a nine-hour work day, which included the time of the morning and afternoon 15-minute rest periods.

Both lines start at the rear of the second floor of Plant No. 2, progress toward the front, drop to the first floor and retreat to the rear of the building, where the finished slabs are stacked in cartons and loaded into freight cars.

The first operation, scoring the chipboard for the bends which will form the box, is accomplished on scoring machines. It is important that the set-up of the knives in these machines be made accurately, A. L. Clements, general superintendent pointed out, because their cuts determine the exact size of the finished slab, and any boxes which deviate from their sizes more than 1/32 in. will not be passed by the inspectors.

Lift trucks then carry the stacks of scored paper to 90 and 20 degree corner cutting machines, which complete the box blanks. They are next bent into box shape by a girl inspector, who counts them, and then the corner flaps are stitched to the box sides by women operatives of six stitching machines. A gravity slide delivers them to their respective lines on the first floor.

By this time the line has reached the front of the plant, where two fibre openers, in separated rooms, one on each side of the plant, are loosening and separating the Ceiba fibres and removing extraneous matter such as seeds and particles of the husk.

This fibre comes from the large milkweed-like pods of the bombax trees of Java and the East Indies. It consists of tubular filaments .0002 in. in diameter, about 1 in. long, and sealed at both ends.

Featured by automatic electrical control of weight of the fibre fed, speed of the opener and of the volume of air which carries the prepared fibre downstairs to the slab "unit forming" machines, these openers are results of con-

(Concluded on Page 2, Column 1)

FRIGIDAIRE DEHUMIDIFIER USED IN DAMP PLACES

Dayton, Ohio—Designed for use in organ lofts, basement rooms, clothes closets, libraries, bank vaults, and similar humid spots, the Frigidaire dehumidifier is now being made and sold by the Frigidaire Corp.

This machine, which is not a great deal different in design from a Frigidaire commercial refrigerating unit, does not reduce room temperature, but simply condenses moisture in the air.

Heat from the motor and compressor actually raises room temperature.

The refrigerant is fed through the expansion valve to the evaporator coil, then to the compressor, and finally to the condenser, which liquefies it and returns it to the receiver.

(Concluded on Page 12, Column 1)

SAFETY CONGRESS TO HAVE REFRIGERATION SESSION

Chicago—Plans for the refrigeration section of the 20th Annual Safety Congress will be made in a meeting of the executive committee, April 20, in the headquarters of the National Safety Council here.

SYNCHRONIZED UNITS FABRICATE DRY-ZERO

(*Concluded from Page 1, Column 5*)

siderable experimentation, design, and careful workmanship in the Dry-Zero machine shop.

The single operator feeds the tightly-packed fibre from a bale at his side into the mouth of the machine. Through the glass windows electric lights show spikes revolving on a drum, and loosening and separating the Ceiba fibres. A mat of the cleaned material is being conveyed over a weighing apron, which is supported on a scale platform along with its mounting structure and its motor driving unit.

Synchronization of the air, fibre, and machine speed is accomplished by an electrical circuit, which controls the scale apparatus. When the output of the opener becomes slightly above the demands of the forming machine below on the first floor, the operator signals and the adjustment is made automatically.

Saco-Lowell Machine Used

A Saco-Lowell opener, next in line, effects a further opening of the fibre before it is borne downstairs in air ducts to the slab forming machine.

These two openers accomplish complete separation of the tiny tubular fibres, without rupturing any of them.

The "forming unit" on the first floor is fed boxes by a girl operator, who sits underneath the machine. She is continually reaching for boxes from the gravity slide, and placing them tight together, open-side up, on the belt conveyor which begins the first floor line.

As the fibre is air-borne into the forming unit, it is straightened out by baffles, and settles on a moving chain of perforated iron plates. One of the most necessary operations in the production line takes place at this point—the fibres are "grained," or laid parallel, by jets of air from above and below the iron plates. The actual forming is effected by adjustable side-irons through which the fibre is conducted, and issues as a mat of even thickness, and width of the insulation slab being fabricated in that particular run.

Meantime the boxes have moved under the graining chamber and are receiving the flow of grained fibre. Two operators are active at this point, dividing the fibre mat from adjacent box ends, so each slab now has its quota of fibre.

Both belt speed and fibre speed are adjustable on the forming machine, so that the amount of insulation going into each slab can be regulated accurately.

At this point an inspector fits each slab into a jig to check its size, and weighs it to insure its weight being correct. The slabs are then passed to the long table, where workers at each side will enclose them with Duplex craft paper and seal them with asphalt.

An asphalt machine marks each end of this table. It consists of a steam-heated vessel under the table, and containing liquid asphalt, in which a steel cylinder revolves when paper to be used above is drawn. The temperature of 300 deg. F. necessary to give the .007 in. coat of asphalt makes the paper hot enough to be painful to the hands of the workers, so a water-cooled cylinder, over which the paper passes, brings down the temperature. From 1,200 to 1,500 lbs. of asphalt are used daily for sealing slabs, according to Robert M. Oberhoffer, assistant superintendent.

Operation of Asphalt Machine

The asphalt machine operator draws paper from the machine to the required length, and pulls a circular knife across it. This sheet is to be the "envelope" for the slab. The next two workers press a fibre-filled box to the sticky asphalt sheet, and pass it along the table to another pair, who cut out the corners with sharp hand knives. Then girls fold up the edges of the paper around the slab, and it is enclosed on all but one side. The last side is given the "seal" sheet from an asphalt machine similar to the first one.

The final sealing is accomplished by a young lady who presses the slab successively to a steam-heated hot plate and a water-cooled cold plate, which hardens the asphalt. The last production operation is the final inspection. This is again made in a jig for size. Only six slabs had been found badly-sized the day the plant was visited.

As the slabs are finished, they are stacked in cartons, the cartons marked and sealed, and wheeled out to the loading platforms in the rear of the plant, where freight cars await their cargo. All carton mill men that have supplied Dry-Zero with cartons marvelled at their size, Mr. Clements said. Standard cartons run as large as 60 x 36 x 20 in. and 44 x 35 x 44 in.

Because orders from different customers call for different sizes of slabs, the machinery must be set up for each new run. The sizes range from 4 in. square to 40 in. square, and in thickness from 1 to 5 in.

Machinery Constantly Improves

The engineers are constantly striving to lower production costs and improve the product, Mr. Clements stated. Some machinery which was designed and built within the last two years is now regarded as obsolete and has been replaced with new equipment.

Each production line making pliable slabs requires the services of 35 employes, of whom 27 are women, according to Norman Easter, superintendent of the pliable slab division. These figures do not include the warehousing men, janitors, or indirect labor.

On Tuesdays a bonus is paid to the workers in each line for their line's output of the preceding week. The bonus is figured on a fixed hourly production basis for the line. Considerable enthusiasm has been shown for the bonus, Mr. Clements says, partly because it is paid so soon after it is earned.

A Foremen's club, with membership of 26 foremen, forewomen, key workers, inspectors and their assistants, meets four times a month. The first meeting of the month is a general business session, the second embraces discussions of general plant problems, and the third is of educational nature with outside speakers. The last meeting of each month is purely social, and includes entertainment by club members.

From 16,000 to 20,000 insulation slabs daily is the approximate capacity of the Dry-Zero plant, with the six production lines in use, and Mr. Clements feels that when the line, which is now being more highly mechanized, is operating that the production will show a marked increase. The established capacity of two lines is 25,000 sq. ft. daily.

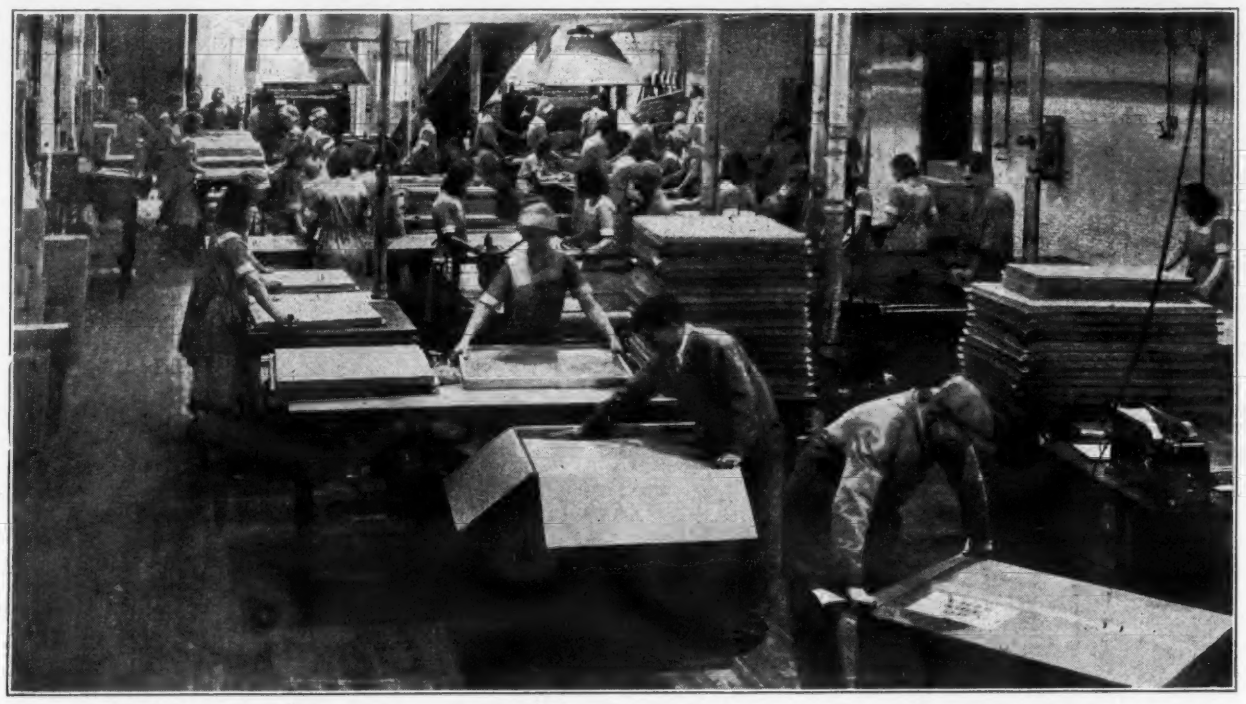
With the six lines, he pointed out, six different sizes of slabs could be run through production at the same time.

Radio Music for the Employes

A dispensary room has been established to care for any workers who become ill during the day, and Miss Edna Wetsel, a graduate nurse, is in charge to administer first-aid treatments. She also operates the plant radio set, which has connections to five loud-speakers throughout the factory.

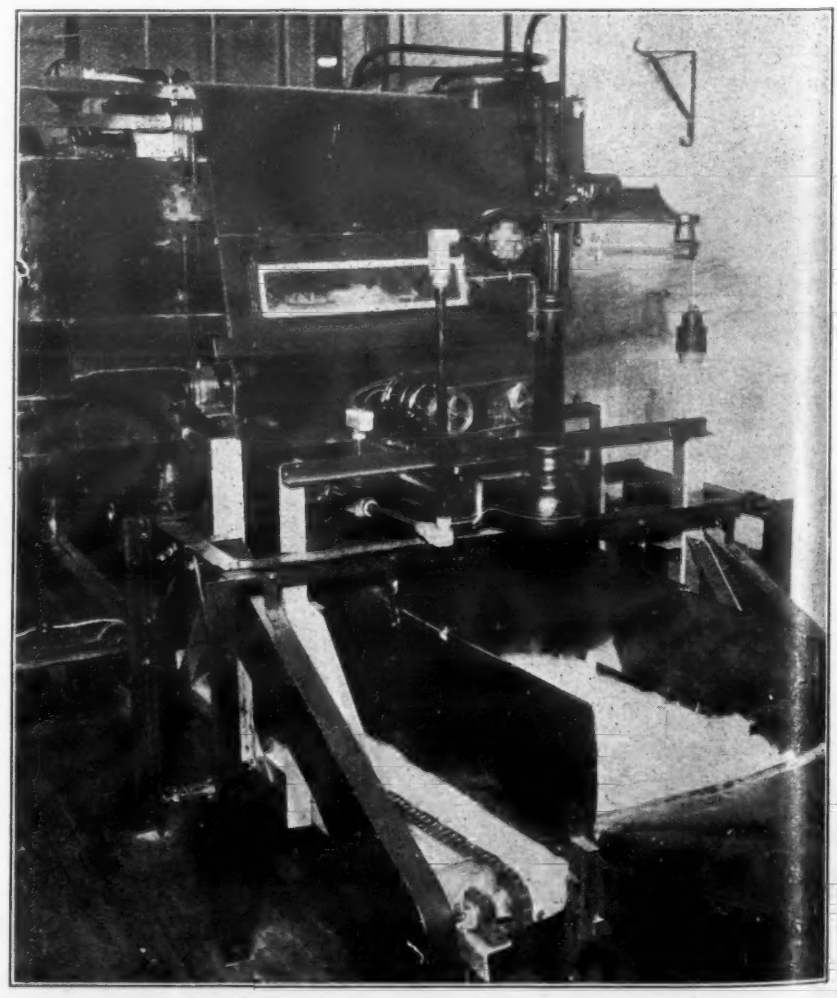
From 10 to 11 in the morning, during lunch hour, and from 3:30 to 5 o'clock in the afternoon the radio is used. A snappy dance piece or march is very effective in pepping up the workers, especially in the hours when they are apt to get tired, Mr. Clements said, and they enjoy it immensely. When no programs on the air appeals to them, a phonograph attachment makes it possible for Miss Wetsel to use their own records.

Action on the Dry-Zero Production Lines



Insulation slabs manufactured in these two assembly lines of the Dry-Zero Corp. start with chip-board boxes delivered by the slide visible in the background and move forward along the tables to the packaging operations seen in the foreground. Each of these two lines are 90 ft. long, and employ 35 workers each, including those on the floor above.

Specially-Designed Fibre Opener



An automatic electric weighing device on Dry-Zero's fibre opening machines insures uniform density of the insulation.

PROTECT Your Sales

If your cabinet does not hold the finish, or corrosion sets in, your distributor and consumer is dissatisfied and it ultimately reflects upon you. This can be avoided if you use

Superior Galvannealed PATENTED PROCESS

"Superior Super-Metal" PATENTED PROCESS

The Coating affords protection against Rust! (Zinc coated)

Under the most difficult operations of Cabinet Production the Coating will not Break or Peel.

It offers an ideal surface (a bond) for Lacquer, air drying or Baked Enamel.

It will retain these finishes under severe conditions of use.

Through the widespread adoption of this special coated sheet metal, cabinet manufacturers have brought about a basic improvement.

We manufacture these sheets to satisfy a positive requirement.

Booklet on Request

The Superior Sheet Steel Company

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Division of Continental Steel Corporation—General Offices, Kokomo, Ind.
Plants at—Kokomo, Indianapolis, Canton

Manufacturers of: Black, Galvanized, Long-Terne and Special Coated Sheets, Roofing and Kindred Products; Billets, Rods, Wire, Nails and all types of Fence.

(137)

REFRIGERATION USED TO TEST AUTO TOPS

Stamford, Conn.—Electric refrigeration has been put to use by Richards & Co., makers of artificial leather fabric for automobile tops, to test the cold-resistant properties of its product. In order to determine whether the fabric will remain unaffected after exposure to sub-zero temperatures in northern climates, the local company created an artificial "Arctic Circle" in its own laboratory.

Automobiles are now in use in many parts of the world where the "merk" often enters a period of depression. Even in upper Michigan the temperature goes far below the zero mark on the thermometer. An artificial fabric manufactured in a temperate clime may crack or otherwise deteriorate under these rigorous conditions, and it was to forestall such occurrences that Richards & Co., makers of the Zapon auto top fabric as well as a wide variety of lacquers and other products, decided to create its own cold.

Called on by the Stamford concern, the Downes Smith Co., Frigidaire distributors of Bridgeport, went to work on the problem and provided an installation which met the need. The installation consists of a small Frigidaire ice-maker, cooled by a ¼ hp. compressor, with a single 2TF coil, according to A. F. Becker, manager of the Frigidaire concern.

The two cube-trays of the ice-maker are used in the fabric tests. Sample pieces are cut from the fabric to be tested and placed in the trays, with a registering thermometer. The fabric is kept in the trays for varying periods, then removed and subjected to rigid tests. As the refrigerator is placed near the center of the plant's laboratory, immediate analysis of the samples after removal from their icy dungeon is possible.

Officials of the Stamford company have expressed themselves as entirely satisfied with the installation, which has enabled them to duplicate conditions their product will face in cold regions. The temperature has been run under the mark of 25 deg. F. below zero, according to workers in the laboratory, but under ordinary circumstances a temperature of 16 below is ample for testing purposes. If the fabric is not affected at that point, it is fairly sure that it will stand almost any degree of cold.

Testing Automobile Fabrics

A Frigidaire ice-maker installed in connection with a ¼ hp. compressor is used by Richards & Co. of Stamford, Conn., to study the effect of arctic conditions on auto top fabrics manufactured by them.

R. M. SHERMAN WILL HEAD OIL BURNER ASSOCIATION

Boston—R. M. Sherman, president of the Silent Glow Oil Burner Corp., has been elected president of the Distillate Burner Manufacturers' Association. R. W. Drown, sales manager of Lynn Products Co., and F. W. Barhoff, Sr., of the Bunsen Oil Burner Co., have been elected first and second vice-presidents. Mr. Isaacs, of Tower Manufacturing Co., is treasurer, and H. H. Morse, of Florence Stove Co., secretary.

Final steps were taken in the organization of this association by representatives of the Tower Manufacturing Co., Alaska Freezer Co., Silent Glow Oil Burner Corp., Quaker Manufacturing Co., Fowler Oil Burner Co., Inc., Automatic Burner Corp., Lynn Products Co., Florence Stove Co., and Bunsen Oil Burner Co.

The organization includes both manufacturers of space heating equipment and range burner manufacturers.

MECHANA-KOLD MARKETS ACCESSORIES

Bay Shore, N. Y.—Refrigeration parts and accessories are now being sold by the Mechana-Kold Corp. of this city, according to a recent announcement.

The new line will include direct expansion chilling units in both vitrified porcelain enamel and alloys, Timken and Hyatt bearing compressors, and thermostats.

The porcelain enameled cooling units were designed especially to provide porcelain harmony in porcelain-lined refrigerators, according to this company. Officials claim that two ounces of refrigerant will operate the smaller dry units.

KEROTEST COMPANY NAMES NEW DISTRIBUTORS

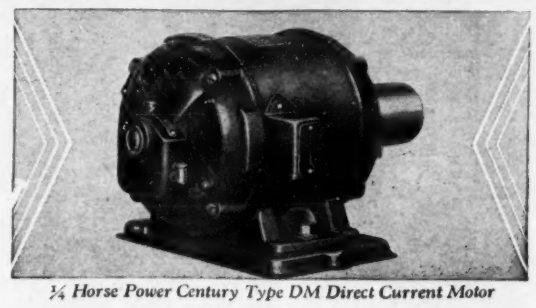
Pittsburgh—Distributors in Cincinnati and Greensboro, N. C., have been named by the Kerotest Mfg. Co. of this city, manufacturers of valves and fittings.

The new distributors are Merkel Brothers Co., Burbank St. and C. L. & N. R. R., Cincinnati, and the Home Appliance Service Co., Greensboro.

YORK COOLS FUR VAULT

New Haven, Conn.—York air conditioning equipment has been installed in the fur vault of Kramer's fur shop, 187 Orange street. The vault is 40 x 24 x 15 ft. in dimensions.

THEY KEEP A-RUNNING



¼ Horse Power Century Type DM Direct Current Motor

DIRECT CURRENT MOTORS

Century fractional horsepower Type DM Direct Current Motors are built to meet the requirements of such exacting service as electrical refrigerators, oil burners, pumps, compressors, and similar apparatus.

They withstand the dampness frequently surrounding such installations, and humid tropical climates.

Bearings are made from phosphor bronze castings, the best bearing material obtainable. The Century wool yarn system of lubrication assures at least one year's continuous 24-hour per day operation without reoiling.

Century Direct Current Motors are built in sizes from ¼ to 100 horsepower.

CENTURY ELECTRIC COMPANY
1806 PINE ST. - - ST. LOUIS, MO.

40 U. S. and Canadian Stock Points and More Than 75 Outside Thereof

Century MOTORS

FOR MORE THAN 27 YEARS AT ST. LOUIS

Now national advertising

features

Household Refrigerator Insulation

By Celotex

FOR the first time, carefully selected national magazines are carrying a series of striking advertisements featuring Celotex insulation in refrigerator cabinets.

Now Celotex Refrigerator Insulation becomes an even more powerful talking point for the cabinets on your floors.

Millions of home owners will read these interesting and unusual pages—will carry away the lasting impression that refrigerators insulated with Celotex offer the very latest improvement in cabinet construction.

Now the nation-wide preference for Celotex is pointed directly into the field of refrigeration—to help your salesmen every day in the week.

CELOTEX
BRAND
INSULATING CANE BOARD
REFRIGERATOR INSULATION

The word Celotex (Reg. U. S. Pat. Off.) is the trademark of and indicates manufacture by The Celotex Company.

THE technical reasons why more than 25 leading manufacturers have adopted Celotex Refrigerator Insulation should be absolutely clear to every retail salesman. Instruct your men to use them—whenever they talk "economical refrigeration."

1 *No heat-leaking cracks or joints.* Each insulated area is covered with a single board of Celotex, cut to just the right length, width and thickness. There is no "patchwork" of pieces, full of leaky joints and cracks.

2 *Maximum insulating efficiency.* The Celotex used to insulate refrigerators is a special kind of Celotex fabricated by processes that increase its effectiveness to the highest practical point. It meets the strictest requirements of refrigeration engineers.

3 *Stronger, more substantial walls and doors.* Celotex reinforces the framework of cabinets, adds lasting structural strength, gives your customers the desired impression of durability. Yet it is so light that it adds little to the weight of the cabinet.

4 *Clean, odorless, sanitary.* Celotex is made from long, tough fibres of cane that produce its remarkable insulating efficiency. These fibres are carefully sterilized. They are entirely odorless. They are waterproofed to resist the absorption of moisture. No insulation could be more sanitary.

The Celotex Company, 919 North Michigan Avenue, Chicago, Illinois. In Canada: Alexander Murray & Co., Ltd., Montreal. Sales distributors throughout the World.

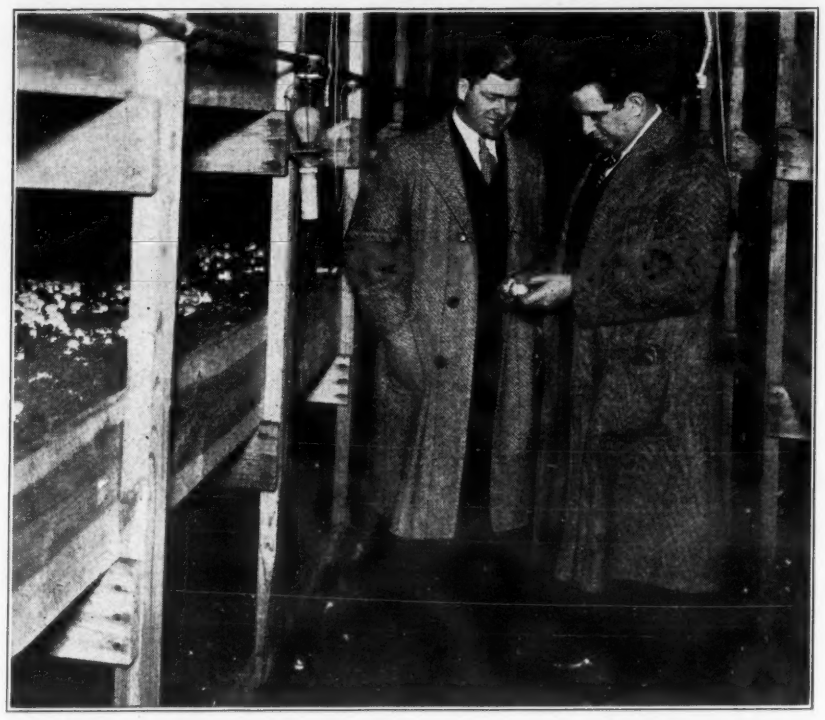
The first advertisements in this series appeared in the *March 21 Literary Digest* and the *April Good Housekeeping*. Look for them!

The Purest Sulphur Dioxide
EXTRA DRY
Made by our exclusive patented process.
ESOTOO
Trade Mark Reg. U. S. Patent Office
Pure, easy to handle, does not deteriorate.
Made expressly for refrigerating use. Analysis guaranteed to show not over 50 parts of moisture per million.
Carried in stock by our Agents everywhere. Write or wire us where we can serve you.
VIRGINIA SMELTING CO. ◆ ◆ West Norfolk, Virginia
F. A. EUSTIS, Secretary 131 State St., Boston, and 75 West St., New York

RUGGED-POWERFUL-
YET- Silent

Exclusive features of construction make the Leland motor unusually rugged and powerful. Spring mountings eliminate vibration. Yet it is so quiet that standing three feet away, you cannot detect a sound. It is these features that make the Leland the best motor yet developed for electric refrigeration. Available in various fractional sizes.
LELAND ELECTRIC CANADA, LTD
7-9 Duke St., Toronto, Canada
The Leland Electric Co.
Dayton Ohio. U.S.A.

Cooled Rooms for Mushrooms



The rate of growth of mushrooms is regulated by the room temperature

MUSHROOM CULTURE USES AIR CONDITIONING PLANT

Dallas, Tex.—Air conditioning has brought a new industry to this city in the raising of mushrooms by the Wakefield Mushroom Co.

Although the natural climate is not conducive to the culture of these delicacies, M. C. Wakefield, president of this company, has appropriated electric refrigeration to bring down the temperature in the summer, and gas heat to raise the temperature to the required 45 and 50 deg. F. in the winter.

The refrigerating equipment consists of a 12-ton York compressor, electrically driven, and thermostatically controlled in connection with a brine tank. The brine is kept at temperatures ranging from 28 to 40 deg. F., according to climatic conditions, Mr. Wakefield said.

The brine is circulated through coils hanging from the the ceiling of the five 60 x 20 ft. rooms in which the mushrooms are grown. The room temperatures are controlled by regulating the amount of brine flow.

One of the interesting features of the establishment is that complete control over the growth of the plants can be exerted by temperature regulation. If the temperature drops below 45 deg. F., the growth is retarded, and can be completely stopped by further temperature reduction. At about 50 deg. F. the plant begins to grow rapidly.

Thus the producer is in full control of his crop. When sales fall off, the vault temperatures can be reduced to stop the plant's growth; as sales increase, the temperature is raised to mature the crop for market.

A. S. R. E. CONVENTION PROGRAM ANNOUNCED

(Concluded from Page 1, Column 2)

Louis, "Design of Drinking Water Systems."

A. L. Mullergren, consulting engineer of Kansas City, "Management Control of Large Groups of Ice Plants."

A. W. Archer, of Archer & Lloyd, Kansas City, "Bakery Refrigeration in Practice."

The second session, to start at 10 a. m. Thursday morning, on commercial-domestic machinery will be presided over by Glenn Muffly of Detroit, vice-president of the Society. The speakers and subjects follow:

T. W. Carraway, Schwitzer-Cummins Co. of Indianapolis, "Control of Brines and Refrigerants."

J. L. Knight, of the General Electric Co. in Kansas City, "Paper as a Refrigerator Insulation."

D. P. Heath, Kelvinator Corp., Detroit, "Developments in Evaporator Design."

C. H. Tanger, Servel Corp., Evansville, Ind., "The Noise Problem in Compressors."

H. J. Krampe, Armstrong Cork Co., Lancaster, Pa., "Low Temperature Test Rooms as an Aid to Research."

The Friday morning session, also starting at 10 o'clock, will be on new thermal problems. Arthur Hardgrave, of Kansas City, will preside. The speakers and their subjects are listed below:

J. C. Irwin, Jr., of the U. S. Cold Storage Co., Atlanta, Ga., "Chemistry in Food Freezing and Cold Storage."

Paul Scates, of the University of Tennessee, Knoxville, Tenn., "Factors Affecting Ice Melting Rates."

F. W. Rabe, Anheuser-Busch Co., St. Louis, "Economics of Carbon Dioxide Solidification."

Dana Burks, of the University of Illinois, Urbana, Ill., "Chemistry of Water Hardness."

The last speaker has not yet been announced, and may be Charles Belshaw, consulting engineer of Detroit, on "Ice Refrigerators"; Harry M. Williams, of Frigidaire Corp., on F-12; or Mills on "Refrigerator Cars."

The social program includes a welcome lunch Wednesday noon, a tour of the city in the afternoon, and a stag party for men, and a theatre party for the women that evening.

A golf tournament will be held on Thursday afternoon, and a banquet with dancing that night. Friday afternoon will be taken up with inspection tours of industrial plants in the vicinity.

One and one-half fare round-trip rates have been arranged with the railroads. The official train of the Missouri Pacific will leave St. Louis at 2:02 p. m. May 6, while the Chicago official train on the Santa Fe leaves there at 9:05 p. m. May 6. Room reservations may be made by writing the Kansas City Athletic Club; David L. Fiske, secretary, at 37 W. 39th St., New York; or E. M. Dodds, U. S. Cold Storage Co., Kansas City.

BROWNE EQUIPMENT KEEPS VEGETABLES

Kansas City, Mo.—Forced air circulation and humidity control systems, designed by Milton V. Browne of this city, are being built and sold by the Seibel Co., refrigeration equipment manufacturers.

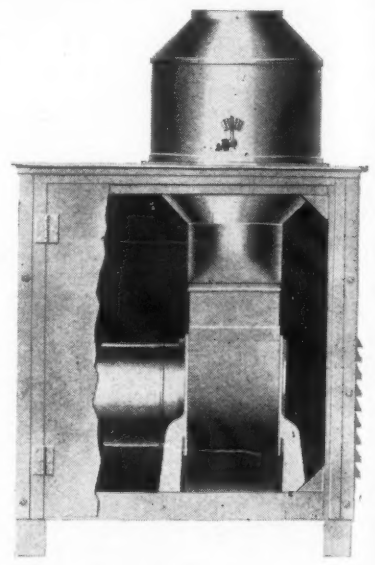
The apparatus has been designed to eliminate storage odors, apple scald, mold, and other cold storage difficulties by securing air motion and humidity control in rooms refrigerated by exposed piping. It consists of a circulating fan and humidifier enclosed in the cooler cabinet.

To date 55 installations have been made by the Seibel Co., which has held the patent and manufacturing rights since July, 1930. Distributors for the equipment are being appointed, according to L. J. Seibel, president of the company.

In action, air is drawn off the floor and forced against the cooling coils, where its moisture content is condensed out. This process also extracts from the air all odors, which are nothing more than gases with an affinity for moisture, according to Mr. Browne.

The air next is passed around the humidifier, where a proper amount of fresh, odorless moisture is added. This reconditioned air, free of odors and having the desired temperature and proper humidity, then is distributed evenly throughout the room by means of ducts and metered nozzles.

By his experiments, Mr. Browne decided that cold is but one factor in refrigeration, while constant circulation of fresh air with the proper moisture content plays a large part in successful cold storage. Such difficulties as egg shrinkage and contamination, apple scald, quick deterioration of lettuce, celery, etc., and the wasteful, improper ripening of bananas have been traced to stale air and an improper circulation.



Close-up of Browne apparatus

Lettuce, celery, turnips, etc., quickly wilt and deteriorate in such air; and the same is true of all other vegetables and fruits under ordinary refrigeration, in his opinion.

This equipment provides an even temperature, and positive air circulation with a definite number of complete cycles per hour, its manufacturers claim. There is neither blowing nor blasting, but just an even circulation that draws all odors away from the products and surrounds them with fresh air of the proper temperature. Air strata and dead air pockets, too, are supposed to be prevented.

One of the features of the Browne system is the humidifier. This contrivance, operating on the principle that air takes up what moisture it can carry and will not deposit it in the presence of unvarying temperature, sets up a relative humidity balance between the air and the products within the storage room. This reduces shrinkage in eggs and other products conversely, as the humidifying principle prevents condensation or the depositing of moisture in the room. Therefore, mold, the by-product of dampness or excessive moisture, is eliminated.

A special electric humidifier has been devised by Mr. Browne for the ripening and storage of bananas, where accurate and quickly adjustable humidity is essential. With this device, it is possible to increase the humidity as desired, enabling the bananas to be ripened in a much better condition. The stems remain green and nourish the fruit to full maturity.

HOW IMPORTANT ARE THE WORDS:

"Made by the Makers of.."

to you?

From the Heartwood of Southern Pine
Armstrong's Temlok
New, low-cost, efficient insulation for domestic refrigerators
Armstrong Cork & Insulation Co.
Executive Offices: Lancaster, Pa. Branches in principal cities
Send for this sample of Armstrong's Temlok. Watch for the heart-shaped label. It quickly identifies this new and better insulation, fabricated from the heartwood of Southern pine

YOUR wife wouldn't buy a can of beans that was labeled merely "Baked Beans." This same resistance is met by insulation, especially new insulation, made by some unknown company. And so you ask: "What is the record of the manufacturer?"

We invite such a scrutiny of Armstrong's Temlok Refrigerator Insulation, a low-cost, efficient insulation especially developed for the domestic refrigerator industry, for it is not "Temlok unknown" but "Temlok, made by Armstrong." And Armstrong is the maker of quality products—of cork products since 1860—of high-grade insulations for more than thirty years. Armstrong's Corkboard Insulation is recognized as the standard of the cold storage industry. The name Armstrong has become a household name when associated with Armstrong's Linoleum. It is natural to assume, then, that this prestige is associated with Armstrong's Temlok—by manufacturers who use Armstrong products—by retailers who sell them—by consumers who buy them.

Temlok itself gives proof of quality. Repeated tests show that this low-cost fibre board *does* rank with other Armstrong products. Temlok has low conductivity and extremely low moisture absorption. It is light in weight, rigid, structurally strong, sterile, and odorless. It is furnished in solid-inch and half-inch thicknesses and in built-up layers as desired. It can be cut to provide custom-made board, quickly and economically installed. All this at a low cost.

We'll gladly give you all the other facts, including Temlok's moderate cost. Complete information and samples will be sent on request. Write Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.

Armstrong's (A) Product

Armstrong's Temlok

Low-cost, Efficient Insulation for Refrigerators

MARKET JOBS NEED HUMIDITY CONTROL

By C. H. Breidenthal
Chief Engineer, Refrigeration Division
Grinnell Co.

RECENT changes in the application of refrigerating equipment for air conditioning installations in chain stores and butcher shops have evoked considerable interest.

The successful operation of a unit cooler depends on the proper control of liquid in the unit. The reason for this is that a very small tube surface must provide a large amount of effective radiation surface through the medium of fins in a unit cooler. These fins are mounted on the tubes, and induced air circulation is provided by a motor driven fan mounted on each unit.

In order to secure a high efficiency of the radiating surface, it is necessary that the cooler be operated constantly in a full and uniform flooded condition. Another important reason for the unit being completely filled with liquid is that the internal capacity is small, holding only about 15 lbs. of refrigerant.

This statement does not mean a flooded condition in the sense that is expressed by most refrigeration machinery people. It really means that a positive liquid level is carried at all time in the unit cooler, thereby providing uniform refrigeration effect at all times.

One of the major problems of butcher box refrigeration is the maintenance of a proper humidity in the butcher box, and the provision of air circulation to prevent moulds and decomposition.

This humidity may be controlled by simple standard adjustments which are furnished as a part of each unit cooler. The humidity control feature of the unit cooler is the result of studies of the relationship of air velocities and humidity balances. At the same time, the air circulation feature of the unit cooler maintains constant air circulation in each part of the butcher box, thereby preventing mould on food products.

Another feature is automatic defrosting. This is entirely controlled by the room temperature thermostat and requires no human attention. The principle of the automatic defrosting is very simple and is not dependent on any special devices for its function.

The air circulating fan on the unit cooler operates constantly; therefore, with the unit cooler maintained in a complete flooded condition at all times, the absorption of heat at the time the refrigeration machine is shut down by the room thermostat is very rapid, requiring only a short time to build up a temperature that causes the melting of the frost from the fins and tubes.

In a large number of chain store and butcher installations, we find that this defrosting takes place on each cycle of the compressure shut down, amounting to ten to twelve times per day. This feature not only keeps the evaporator surface clean and efficient, but the melting water carries entrained food odors and bacteria down the drain, away from the room.

All parts of the unit cooler are either built of rust-resisting material, or the parts are specially processed to resist rust. After assembly the entire piece of equipment is given two coats of aluminum colored Duco lacquer.

The Grinnell unit cooler is being used by a number of the larger chain store groups in this country. One of the most important considerations from their standpoint has been that cut meats can be maintained in good condition and appearance.

The unit coolers can be used for both ammonia and sulphur dioxide installations. One of the important observations that has developed through the use of the unit cooler is that comparatively small compressors can be used. The size of the compressor, of course, depends on the size of the butcher box and display cases that are installed in each particular store.

The Grinnell Co. maintains a complete research laboratory, devoted wholly to refrigeration, at its main office in Providence, R. I.

Unit Cooler in Butcher Shop

Unit cooler in the meat room of the First National Store, Quincy, Mass.

CARRIER CORP. FURNISHING OFFICE AIR CONDITIONER

(Concluded from Page 1, Column 4)

which the return steam line is passed to hasten evaporation. In the summer, when humidification is unnecessary, the same pan serves to catch water condensed on the cooling coils. Humidity control is effected by a manually-operated adjustment which regulates the height of the water in the pan by changing its exit level to the drain.

Provision is made for drawing outside air from a duct arranged under the window, and forcing it with the recirculated air, up through the conditioning apparatus, up into the room. An adjustable damper varies the proportion of outside air to recirculated air. The recirculated air intake is located at the lower part of the front of the cabinet.

Another damper proportions the amount of air to go through the heating and cooling coils, to that air by-passed around them. Small doors at each end of the cabinet provide access to the controls.

30,000 ALCO
Automatic
Control Valves

Now in Service on the Leading Makes of Refrigerating Machines.

Write for Descriptive Literature on Alco Automatic Control Valves

ALCO VALVE CO., Inc.
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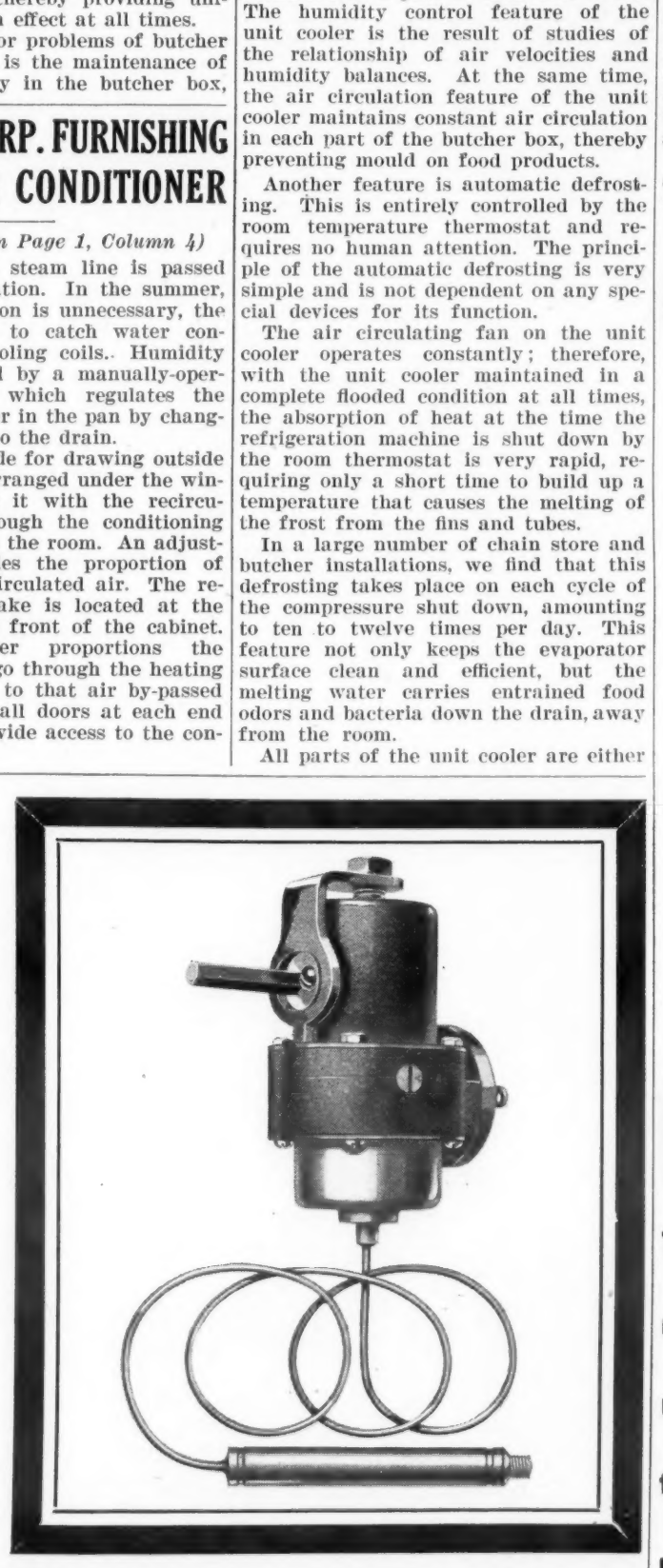
Manufacturers of constant pressure expansion valves, thermo valves, high pressure float valves, liquid magnetic stop valves, and suction line stop valves.

A REFRIGERATOR MOTOR IS DIFFERENT

The majority of successful electric refrigerator manufacturers use Delco motors. They realize, as did Delco engineers years ago, that a refrigerator motor must be different. And in the motor that Delco engineers developed, they have found the answer to the special power requirements of their product. Delco's noise-absorbing rubber mounting, for example—Delco's brush lifting mechanism—Delco's lubrication principle—have proved outstandingly successful in more than two million units. And Delco tested quality has satisfied the highest standards of reliability. Dependable field service for Delco motors is provided through the nationwide facilities of United Motors Service.

DELCO PRODUCTS CORPORATION, DAYTON, OHIO



In a Single Device

Thermolectric Refrigeration Controls include cold adjustment and defrosting mechanism *in a single device.* In addition to this striking feature they are adjustable for range and differential, adaptable to horizontal or vertical mounting, are built with both direct connected bulb and capillary tube remote bulb, and are actuated by the famous Bishop & Babcock Multiflex Bellows. Consult our engineering staff about your control requirements. ● *Send for the Thermolectric Bulletin.*

The Bishop & Babcock Multiflex Bellows, used for years on a variety of different controls.

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4901 - 4915 Hamilton Avenue
Cleveland, Ohio

ENGINEERING SECTION

ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

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Air Conditioning

SOME of the best engineering minds of the country have recently become attentive to the very interesting and comparatively new art of air conditioning. Up until now, air conditioning installations have been made just where it was industrially necessary or commercially desirable. The vast field of air conditioning for human comfort in homes has been practically untouched, principally because equipment within price range of the home owner is yet to be produced.

The term air conditioning is somewhat ambiguous. In a broad sense it can be taken to mean heating, cooling, circulating, cleaning, or dehumidifying air. Specifically the term will probably denote the operation of bringing air to the proper temperature and humidity, and delivering it in a pure state.

Development of the Art

The art of air conditioning developed largely in response to the demands of industries which embrace manufacturing processes that are highly sensitive to humidity changes, as well as those commercial operations in which failure to regulate temperature and humidity is reflected in profit and loss statements. They sought equipment which would produce climatic conditions artificially, rendering them independent of the daily weather changes.

Air conditioning equipment is recognized as a necessity in textile mills, hospitals, flour mills, printing plants, bakeries, theatres, public auditoriums, and many other diversified applications. Industrial installations usually "pay for themselves" in a short time.

It is estimated that industrial air conditioning in this country employs 40,000 tons of refrigeration, while air conditioning for human comfort uses 75,000 tons of refrigeration.

Significant Experiment

A recent experiment made by the American Society of Heating and Ventilating Engineers laboratory, in the Bureau of Mines at Pittsburgh, concerned the relations of temperature, moisture, and air motion to human comfort.

Air velocities were varied from 0 to 700 ft. per minute, and the temperature-moisture conditions tested over the comfort range, until identical comfort was obtained with different combinations. Then for any condition of temperature, humidity, and air motion, the corresponding "effective temperature" was determined, based on saturated air as a reference. Results of other experiments made recently indicate that the art is progressing.

Air conditioning is a very attractive study for the refrigerating engineer. Establishments using it now are well able to pay for capable services, and with the improvement of technique in design and production, the applications are increasing rapidly.

Time To Cut Costs

WITH the arrival of the spring season, when refrigerator manufacturing operations must be stepped up to meet the demands of the sales departments, forward-looking production managers are examining their manufacturing methods to see that every opportunity is being taken to lower their costs.

Increased production usually results in one of two conditions. Either the factory managers become so involved in meeting their schedules that it takes all their attention, or they make a special point to take advantage of every chance to trim costs.

The possibilities for shaving production costs are always greatest when schedules are being increased, for it is then that finer specialization can be made among the workers' operations, capital invested in machinery can be more completely utilized, and further mechanizing of operations becomes justified.

Savings effected in the factory are the most desirable of economies. They mean lower prices to the consumer, more sales for sales department, and more profits for the manufacturer.

Right now the wise factory superintendent is making sure that his organization is not overlooking the immediate opportunities for lower production costs.

GLEANINGS
FROM RECENT PERIODICALS

THE application of refrigeration to baking is now more extensive than ever before, but the limit has by no means been reached. The time has come where it is essential for the refrigerating engineer to know more about the baker's problems, so that he can act intelligently, in planning a refrigeration system for the baker that will adequately meet the requirements.

Each day witnesses an increasing application of refrigeration to the processing of bread and other baked products and to the preservation of the raw materials employed in baking. It is also quite interesting to note that not only is mechanical refrigeration coming into its own but that cooling processes in general are becoming more popular in the bakery than heretofore even though the cooling is by means of ice. The baker is learning the importance of temperature and humidity control in the production of uniform, quality goods.

The control of moisture in the air and the temperature of the air calls for considerable refrigeration tonnage. By control of the temperature and humidity in the various departments of the bakery, it has been found that a decided improvement results in the baked product and also a direct saving in materials. The humidity of the air in the dough room, in the proofer, in the bread cooler and at other points in the plant materially affects the nature of the finished product.

TEMPERATURES AND HUMIDITIES

Refrigeration is indicated in a tabulated account of temperatures arranged according to the respective departments in which they are maintained at points where the air condition is of importance. The relative humidity is also given.

TABLE OF TEMPERATURES AND HUMIDITIES

	Proper Temperatures (F°)	Relative Humidity
Flour storage	70° to 75°	60% to 65%
Fermentation room	78° to 82°	75%
Yeast storage	40° to 45°	60% (Approx.)
Milk	45° to 55°	" "
Sugar	45° to 55°	" "
Shortening	50° to 55°	" "
Wax paper storage	50° to 60°	
Bread dough in mixers	78° to 80°	
Cake dough	50° to 60°	
Ingredient water	34° to 38°	
Bread cooling	80° to°85°	75%

These figures represent temperatures ordinarily desired in practice. The ingredient water should be held at as low a temperature as possible without danger of freezing, because the ingredient water really acts as a cooling agent in the dough mixer.—*Refrigeration*, March, 1931.

ONE of the largest institutional refrigerating plants in the world is to be seen at the New Yorker, Manhattan's largest hotel. The refrigerating equipment which, during the hotel's first year, served 750,000 room guests alone, has a total capacity of 422 tons, and is located in the fourth sub-basement, 78 feet below the street level. The services requiring refrigeration include the drinking-water system, the ice-making tank, the ice-cream department, the food-storage rooms, and the air-conditioning plant. The air-conditioning system alone requires five air washers, nine air filters, 167 tons of refrigeration, and 34 fans with a total capacity of more than 900,000 cubic feet of air a minute.—*Refrigerating Engineering.*

Letters from Readers

Logical Division

25 Broadway,
New York City.

Editor:

I should like to add my congratulations to the many which you have doubtless received over the new section of ELECTRIC REFRIGERATION NEWS, the Engineering Section.

It is a logical division for both news and advertising, and should be especially valuable to your subscribers.

G. VINCENT BUTLER,
Copper and Brass Research Association.

S. O. S.

10 Centre Square,
Easton, Pa.

Editor:

We are calling upon you for some assistance in securing service details in the way of manuals and instructions for the servicing of Servel, Kelvinator, Copeland, and Wayne electric refrigerators.

We have had marked success in the servicing of Frigidaire, and at the same time would like to be of service to those people who call upon us for service of difficulties which they are experiencing with other makes of refrigerators.

We have definitely arrived at your source as being advisable for the purpose of securing such detailed service information, and being subscribers of your paper we will appreciate it greatly if you will use your best efforts in securing this information for us.

JOHN F. CREVELING.

Contiguous Growth

112 East 19th St.,
New York City.

Editor:

We have been subscribers to the News since the publication began, and have always found it very interesting and an asset to any man who wants to keep posted. Your paper has grown with the industry as a part of it.

The articles by Frank W. Gray are excellent, and should be read by every service man, whether he is a beginner or an old-timer.

H. TREGANOWAN,
Treganowan & Starr.

Kind Words Department

Toronto, Ontario, Can.

Editor:

I find the NEWS very valuable in that it keeps me advised of new developments in the field—sometimes in our own country—before we are advised in the regular way.

J. H. LEHMAN.

Bay City, Mich.

Editor:

ELECTRIC REFRIGERATION NEWS cannot be beat for good news on refrigeration.

C. H. EARL,
Refrigeration Service Co.

Additions to Independent Service Company Directory

California

City Refrigeration Service
L. L. Strohl
4151 Beverly Blvd., Los Angeles

Super Electric Refrigeration
F. W. Peel
3663 Maple Ave., Oakland

Refrigeration Service
H. B. Hill
118 N. Sycamore St., Santa Ana

District of Columbia

Electrical Refrigeration Service Co.
F. G. Schenkel
2805 Rhode Island Ave., N. E.

Florida

Refrigerator Service Co.
E. I. Scott
6 S. W. 11th Ave., Miami

Illinois

Chicago Refrigeration Service Co.
George Monjian
217 East Illinois St., Chicago

Electric Refrigerator Service
F. J. Svec
4427 West Harrison St., Chicago

Louisiana

Woodward, Wight & Co., Ltd.
G. F. Souderes
New Orleans

Massachusetts

Ford Refrigerator Service
William Ford
19 Middleton St., Dorcester

Michigan

Boot & Company
W. K. Boot
115 Fulton St. West, Grand Rapids

Charles A. Abel
Mendota

New Jersey

Refrigeration Service Co.
A. R. Lind
21 William St., Fords

New York

Ditucci Bros. Electric Refrigeration Engineering & Service Co.
151 Amsterdam Ave., New York

Independent Refrigeration Service
Victor Hirshfield
120 West 18th St., New York

Treganowan & Starr
H. Treganowan
112 East 19th St., New York

Ghee Brothers
Joseph J. Ghee
2 N. Grand Ave., Poughkeepsie

North Carolina

Home Appliance Service Co., Inc.
W. H. Parker
Greensboro

Pennsylvania

John F. Creveling
10 Centre Square, Easton

Wisconsin

Burlington-Kelvinator Co.
Leonard R. Partee
Burlington

Coming Meetings, Conventions

Maryland Utilities Association, April 10, Baltimore Hotel, Baltimore. D. E. Kinnear, 803 Court Square Bldg., Baltimore.

Three-M-Congress. Management, Maintenance and Materials Handling Congress and Second National Industrial Equipment Exposition, April 13 to 18, in the Arena and Exhibit Hall, Cleveland Public Auditorium. Under auspices of the American Society of Mechanical Engineers, 29 W. 39th St., New York.

American Oil Burner Association, April 13 to 18, Benjamin Franklin Hotel, Philadelphia.

National Metal Trades Association, 33rd annual convention, April 15 and 16, Hotel Sinton, Cincinnati. J. E. Nyhaw, Peoples Gas Building, Chicago.

Missouri Association of Public Utilities, April 16 to 18, Excelsior Springs, Mo. F. D. Beardslee, 315 N. 12th St., St. Louis.

American Society of Mechanical Engineers, semi-annual meeting, April 20 to 23, Birmingham, Ala. Calvin W. Rice, 29 W. 39th St., New York City.

American Electrochemical Society, spring meeting, April 23 to 25, Hotel Tutwiler, Birmingham, Ala. Colin G. Fink, Columbia University, New York City.

American Institute of Electrical Engineers, district meeting, April 29 to May 2, Rochester. F. L. Hutchinson, 33 W. 39th St., New York City.

American Institute of Refrigeration, convention, April 30 to May 1, Ritz-Carlton Hotel, Atlantic City, N. J. Louis Baron, secretary.

American Society of Refrigerating Engineers, spring meeting, May 6 to 8, Kansas City Athletic Club, Kansas City.

Manufacturers' Club, The Homestead, May 15 to 17, Hot Springs, Va.

National Electrical Manufacturers' Association, spring meeting, May 18 to 23, Hot Springs, Va. A. W. Berresford, 420 Lexington Ave., New York City.

National Electrical Credit Association, annual meeting, May 21 to 22, New York. Frederic P. Vose, 1008 Marquette Bldg., Chicago.

National Electrical Wholesalers' Association, spring convention, May 25 to 29, The Homestead, Hot Springs, Va.

Institute of Radio Engineers, annual meeting, June 3 to 6, Chicago. H. P. Westman, 37 W. 39th St., New York City.

National Electric Light Association, convention, June 8 to 12, Atlantic City, N. J. A. Jackson Marshall, 420 Lexington Ave., New York City.

Association of Iron & Steel Electrical Engineers, annual meeting, June 15 to 19, Cleveland. J. F. Kelly, 1007 Empire Bldg., Pittsburgh.

American Society of Agricultural Engineers, annual meeting, June 22 to 25, Ames, Ia. Raymond Olney, St. Joseph, Mo.

American Society for Testing Materials, annual meeting, June 22 to 26, The Stevens Hotel, Chicago. C. L. Warwick, Engineers' Club Bldg., 1315 Spruce St., Philadelphia.

Pacific Coast Electrical Association, convention, June 24 to 26, Del Monte, Calif. K. I. Dazey, 447 Sutter St., San Francisco.

ELECTRONICS PURIFY AIR BY OXIDATION

By F. E. Hartman
Chief Chemist, Radi-Ion Corp.

IN our large metropolitan areas it is no longer possible to simply go to the outside for pure air. The atmosphere of the average industrial city is laden not only with dust, soot and other solid matter, but also with a variety of waste gases and odoriferous substances that vitiate the activity and zestfulness ordinarily possessed by pure air.

In large cities the burden placed upon the oxygen, through a concentration of gaseous sewage, is so great that it cannot cope with the contaminating substances at a sufficiently rapid rate to maintain city air pure.

Practically all buildings of any size nowadays are provided with ventilating systems for introducing air into the buildings, or keeping it in proper motion. These systems usually include apparatus for cleaning the air of solid matter, but even if the solid particles are taken from the air, it remains flat or stale, due to loss of activity suffered by the oxygen in an effort to cope with gaseous sewage.

This brings us face to face with the problem, not alone of air purification, but of reactivation of the air, in order to restore to it the stimulating properties essential to the efficient performance of our daily routine.

In nature, oxygen of the atmosphere is purified and activated by a combination of forces. These forces include the purifying effect of sunlight, certain electrical phenomena associated with the earth, together with certain eminations of a radio-active nature that enter the atmosphere from the soil. The action of these forces is to keep the oxygen of the air chemically alert, so that it may enter into reaction with unstaple gaseous sewage.

Nature performs these functions in a very unobtrusive way with no accompanying ill effect. To purify air by physical means has long been something of a problem. Past practice always considered the addition of foreign agents to the air, and this created the problem of accurately "dosing" the air, so that just enough of foreign agent is added to complete the purification, without leaving a residue.

Since both the quality and quantity of atmospheric sewage varies from moment to moment, the matter of accurate dosing becomes well nigh insurmountable.

Produces Synthetic Sunlight

Given time, however, modern genius will invariably dig humanity out of the pitfalls that modern progress is continuously laying for it. When the industrial pall threatened to shroud the city's sunlight, science produced synthetic sunlight. Synthetic, true, but in every respect as beneficial as that of nature. And what is just as important, it is always under control, at any intensity.

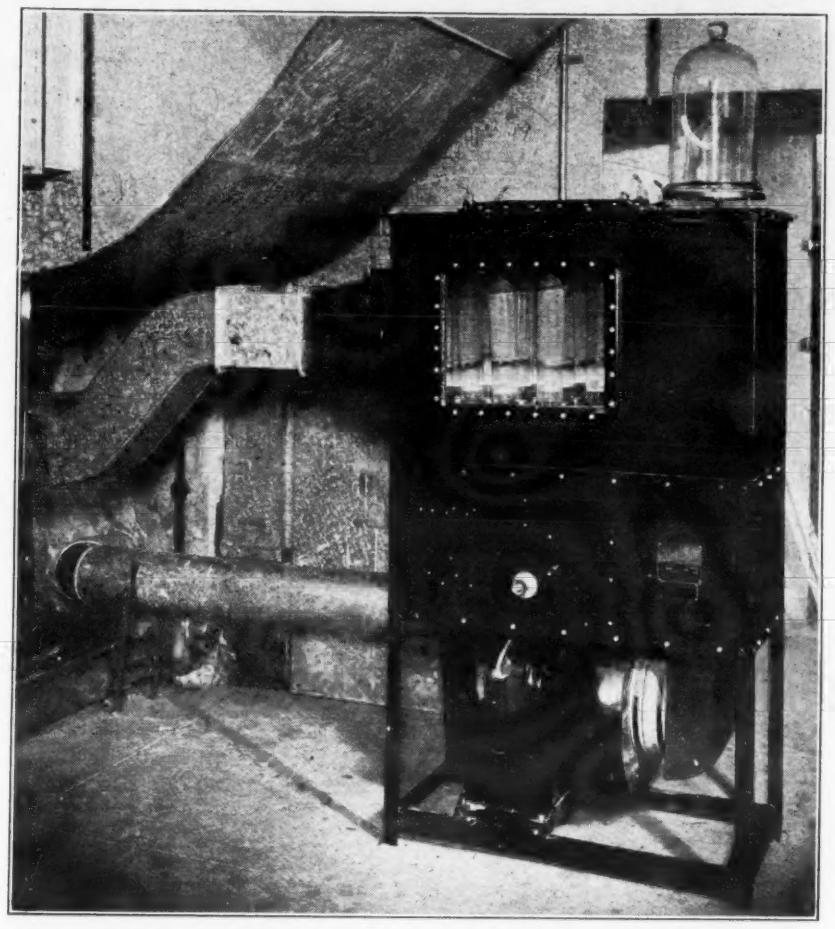
In the matter of air purification science repeats its conquest. The forces of nature that purify air, "in the natural way," have, after years of research and intensive experimentation, been synthesized and placed under control.

Our process of air purification is called Radi-Ion. Scientifically, the term is descriptive. The forces in nature that purify air are radiant in character, and one of the important steps in the train of actions that produces the result is that of ionization.

In the Radi-Ion system, radiant energy, in the form of ultra-violet light and electronic discharges, is brought to bear upon the air in such a way as to activate the oxygen, making it chemically alert, and capable of oxidizing the amounts of atmospheric sewage met with in city air. This method, which we regard as parallel to nature's, adds nothing to the air but energy, energy necessary to accomplish the increased work demand. It simply places the air in a state where it can again purify itself, and keep itself pure.

The Radi-Ion system is employed by the New York Curb Market to purify 165,000 cu. ft. of air per minute; by the Farmers Loan & Trust Co., New York City, to purify 150,000 CFM; the Southern California Edison Co., 200,000 CFM; Severance Hall, Cleveland, 100,000 CFM; and others.

Conditioning Air Electrically



This installation of Radi-Ion equipment in the New York Curb Market treats 165,000 cu. ft. of air per minute by radiant energy in the form of ultra-violet light rays and electronic discharges.

CRACK TRAIN 'COLUMBIAN' TO BE AIR CONDITIONED

York, Pa.—Diner, club, observation, chair cars, and all coaches of the B. & O. crack train, the Columbian, is being equipped with air conditioning machinery by the York Ice Machinery Corp. of this city.

The apparatus to be installed has been designed jointly by the Baltimore & Ohio Railroad engineers and the Engineering Department of the York Ice Machinery Corp. after extensive experimenting. It will permit ventilation of the coaches at controlled temperatures, without admission of smoke or dust.

A complete air conditioning unit, electrically powered, will provide constant temperature whether a car is in motion or standing. The equipment is designed to give a complete change of fresh air in each coach every two minutes at any desired temperature.

Open windows will be unnecessary at any time of the year, the air admitted when doors are opened being taken up by the system and passed through the conditioning process. A logical extension of this service, it is said, will be to provide sleeping cars with air conditioning equipment.

DRY-ZERO MANUFACTURE NEEDS CONDITIONED AIR

Chicago—Air conditioned to a relative humidity of 60 per cent is essential to the proper operation of the fibre openers of the Dry-Zero Corp. of this city.

This is necessary principally to prevent the accumulation of static electricity in the machines, A. L. Clements, general superintendent, pointed out, since uncontrolled static discharges might be a fire hazard in the fibre dust. It is also useful in keeping the fibre in proper condition for the machines.

The conditioned air is furnished to two production lines by a unit of the Carrier Engineering Corp., which provides them with 6,000 cu. ft. of air hourly.

COCHRAN-SARGENT BOUGHT BY AMERICAN RADIATOR

St. Paul—American Radiator & Standard Sanitary Corp. is now affiliated with the Cochran-Sargent Co.

The Cochran-Sargent Co. will be operated under its present name as a division of American Radiator & Standard Sanitary Corp. without change in either official personnel or policy.

HOLBROOK, MERRILL BUYS NU-WAY FIXTURE CO.

Los Angeles—Nu-Way Fixture Co. recently has been consolidated with Holbrook, Merrill & Stetson, Inc., of this city.

Specialized FORGINGS for every Electrical REFRIGERATION NEED

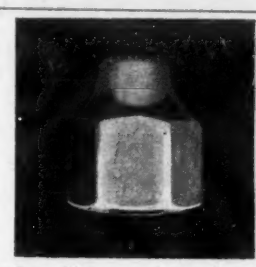
DETROIT FORGING Company
Detroit Michigan
Members of Detroit Business Pioneers

FORGED BRASS FITTINGS
BUILT RIGHT TO STAY TIGHT

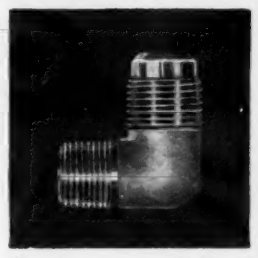
Comparison between various makes of fittings supplied for the refrigeration industry quickly discloses that while "fittings are fittings"—some are better than others.

Commonwealth fittings have earned a reputation during 19 years for being seepage-proof; correctly machined; with close tolerances and careful inspection. We invite comparison.

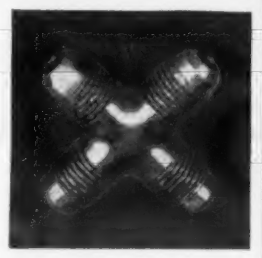
Send for catalog No. 36, descriptive of the most complete line of refrigeration fittings on the market.



Forged brass nuts do not distort under any wrench pressure.



Threads are cut to S. A. E. No. 2 (medium fit) standards.



Each seat on Commonwealth fittings is protected in shipping.

COMMONWEALTH BRASS CORPORATION
COMMONWEALTH AT G. T. R. R.
DETROIT

Above is the 149 Time-O-Stat Airswitch. It is especially suitable for industrial installations where a wide range of operation and dependable service is required.

Write for Further Information

The 149 TIME-O-STAT AIRSWITCH for INDUSTRIAL INSTALLATIONS

RUGGEDLY constructed to withstand extreme conditions of humidity and temperature the No. 149 Airswitch's ideal application comes in the control of heating equipment for garages, factories, greenhouses, florist cabinets and similar installations.

The No. 149 operates over a wide temperature range—from a minus 10 to 130° F. It is equipped with a Con-Tac-Tor Mercury Switch which assures positive switching action. Once installed, it is essential only to set the pointer at the desired temperature.

TIME-O-STAT CONTROLS
Division of
MINNEAPOLIS-HONEYWELL REGULATOR CO.
ELKHART, INDIANA

Manufacturers of Automatic Controls for Oil Burners, Gas Burners, Coal Burners, Electrical Refrigerators, Furnace Fans, Mechanical Stokers Industrial Ovens, Ice Machines, Unit Heaters, also of Sign Flashers, Mercury Switches, Electric Heaters, Corrugated Metal Bellows

RECIRCULATED AIR IS CLEANED IN WASHER

By A. D. Karr, Chief Engineer
Audiffren Refrigerating Machine Co.

THE practical art of ventilation has always included two fundamental requirements. These are (1) to supply an adequate quantity of "fresh" air, and (2) to provide suitable distribution and movement of this air.

In order to meet the second requirement properly, it was rather generally necessary to supply more fresh air than would otherwise be needed to maintain healthful, "well-ventilated" conditions.

It became obvious to engineers working in the field that when ventilation involved heating the fresh air to room temperature, and then throwing away the warm air from the building as fast as it is displaced by new, there was a serious waste of heat. When the coming of air conditioning for comfort began to require not only the heating of the air used for ventilation, but also the refrigeration of it in summer weather, the problem became very serious.

The much greater cost of refrigeration as compared to a like measure of heating, explains the great emphasis which in recent years has been placed on methods for conserving the cooling effect. Since air cooling also includes dehumidifying, which greatly increases the refrigeration load, it is of even more importance not to waste, needlessly, the conditioned air.

Years ago it was discovered that fresh air had impurities in it which were not desirable when introduced into ventilating systems. The various forms of dust and dirt are the most obvious and important of these undesired elements. As a result air washers were developed and have been used for many years to cleanse the fresh air introduced into buildings. Air washers also afforded convenient means for regulating and controlling the amount of humidity in the air after passing through the washer.

Eventually it was discovered that by recirculating a portion of the air through the washer and introducing only enough new air to keep the resulting mixture coming from the washer satisfactory, a considerable saving in cost of operation was possible. It is always necessary to use a certain proportion of fresh air not only to provide oxygen for maintaining life and preventing the carbon dioxide content from rising too high, but also to remove continuously from the space being ventilated volatile material given off by the persons for whom the air is furnished.

Recirculation had many advantages but it became apparent that in spite of the fact that a saving in refrigeration was effected by reducing the quantity of new air that had to be cooled and dehumidified, the actual cost of the refrigerating plant and the cost of operation was still very great and deterred many possible users from installing air cooling and dehumidifying equipment.

One reason for this high cost was the inescapable fact that in order to condense the excess moisture from the new air, it was necessary to cool this air as well as all of the recirculated air down to a temperature corresponding to the dewpoint desired in the conditioned air leaving the washer.

This saturated air had then to be reheated sufficiently to bring the air supplied to the rooms being cooled, to a temperature which would provide the desired temperature and relative humidity in the rooms. This reheating was necessary, but obviously a waste of refrigeration as well as of heating effect.

A notable step in the direction of economy was finally developed whereby a portion of the recirculated air was bypassed around the washer and mixed with the saturated air coming from the washer, thereby automatically providing the reheating effect desired and obviating the corresponding waste of refrigeration.

Washed Air Treated More Intensely

It became necessary to treat the portion of the air going through the washer more intensively than would have been necessary if all the air had gone through the washer. But this change in the degree of cooling involved a relatively slight disadvantage compared to the actual saving in quantity of refrigeration used.

It is probable that in most "comfort" applications of air conditioning today, this combination of recirculation and by-passing part of the recirculated air is being practiced. However, it is obvious to anyone who gives thought to the question that the portion of the recirculated air which is permitted to go through the by-pass and around the washer receives none of the benefits which the washer confers on the air passing through it.

That is, any dust or dirt or volatile matter contained in this by-passed air goes right back into the ventilating system. The percentage of by-passed air under certain conditions may be very large, and in many installations this air, returning through the recirculating system, is seriously defiled.

Usually this recirculated air is withdrawn from the rooms at or near the floor. It carries all of the dust and dirt scuffed off the floor coverings and dislodged from the clothing of the occupants. It is apt to carry small pieces of rubbish and other material carelessly dropped or thrown on the floors. It is not pleasant to think of a large percentage of this material going right back into the supply ducts and being discharged over the heads of people who are supposedly being served with clean, sweet air.

This by-passed air can be filtered mechanically before being re-introduced into the supply system and mixed with the washed air, but there is every reason to desire that all of this air might be thoroughly scrubbed on the wet eliminator plates of the air washer before it is used again. In other words, everyone would like to be sure that all of the air has been subjected to the same sort of treatment that the fresh air outdoors receives as the result of the action of wind and rains which continuously restore its original purity.

From the foregoing it will be seen that although the by-passing method was a step forward from an economical standpoint, it was really a backward step from the point of view of sanitation and ordinary good taste. There has seemed to be no alternative to accepting either one drawback or the other in any practical installation, but developments of the past few months have rectified this situation in a new and unexpected fashion.

It has been common practice when working with air washers to assume that all air passed through them must be saturated when leaving them and, therefore, in a dehumidifying washer it has been considered necessary to cool the air to the desired temperature of saturation.

As a matter of fact, this is not necessary and warm humid air can be put through a properly designed air washer in which a cold spray is employed and be brought out with a considerably lower moisture content, and yet at a temperature substantially higher than the dewpoint.

Furthermore, the relative proportion of vapor condensing and air cooling which takes place in such a washer may be controlled and may be made to respond very readily to automatic control. These new developments have been identified under the name "Airectifier." In an Airectifying system it is not necessary nor desirable to by-pass any of the air around the washer.

All of the new air and all of the recirculated air is put through the washer and subjected to the dirt-removing action of the spray and to the scrubbing action of the wet eliminator plates. At the same time, no more cooling is done upon the air than is needed to produce the desired condition in the store, or theatre, or offices which the system serves.

Resembles Nature's Processes

The principle underlying the Airectifier development can be illustrated by a reference to nature's own processes. We are all familiar with the stimulating effect of a cold rain storm. In spite of the fact that water is coming down in great volume, the cold rain has the effect of condensing surplus water vapor out of the air and of reducing the humidity. In such a rain, unless it be an extraordinary downpour, it will be found that the air is not as cold as the rain water, nor is the air saturated.

On the other hand, consider the effect of a driving mist which is sometimes encountered. On such a day everything is wet. Everything is of one temperature outdoors, and the effect is very depressing. It is necessary on such a day to get indoors and before the warmth of a fire in order to reduce the relative humidity below the saturation point and obtain comfort.

What happens in an "Airectifier" system may be likened to the first example. By properly controlling the "Airectifier" action, reheating is not required for an average comfort installation.

Inspecting Their Drop Forgings

Delegates to the Purchasing Agents' Show inspecting Detroit Forging Co. booth.

NEW SIMONDS PLANT TO HAVE NO WINDOWS

Fitchburg, Mass.—One of the largest industrial air conditioning installations in the world is being made by the Carrier Engineering Co. in the new 4½ acre factory of the Simonds Saw & Steel Co. here. The $1,500,000 building will have no windows, no skylights, no partitions, no elevators, and no stairways.

A complete change of air will be made throughout the plant every 10 minutes, 500,000 cu. ft. of outdoor being drawn through the intake, propelled by motor-driven fans through ducts to openings in the trusses, and brought back through outlets in the floors.

Air temperature will be kept constant by thermostatic control. Cooling will be accomplished by evaporation in an atomized spray tank, and heating will be effected by electric coils in the auxiliary fan houses. The equipment will also include humidity control and washing and filtering devices.

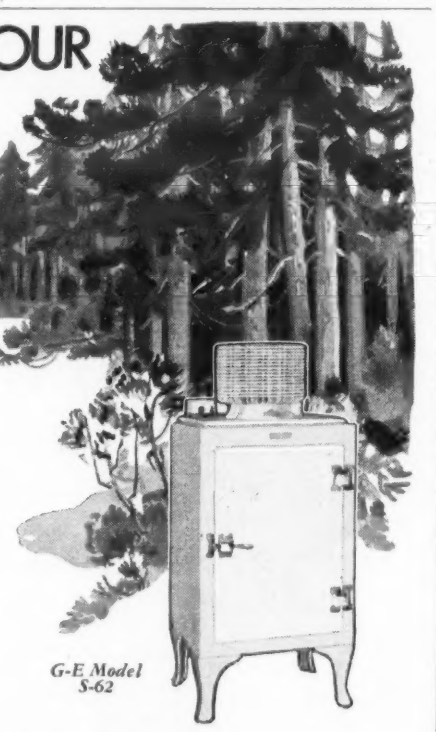
"Experiments have proved conclusively the wholesome effect on human health of properly conditioned air," Alvan T. Simonds, president, said. "Through automatic humidity control, the moisture content of the air in our factory will be kept at a point most beneficial to comfort and health."

N. E. M. A. DISCUSSES WORK OF TRADE ASSOCIATION

Detroit—The important part that a trade association plays in the electrical industry was outlined by Clarence L. Collins, president of the National Electrical Manufacturers' Association, at a meeting of the Industrial Electrical Engineering Society of this city, April 1.

Mr. Collins, guest speaker, who was introduced by Harry Collins, president of the local organization, emphasized standardization, simplification and code legislative activities of the trade association.

AS LASTING *as* YOUR STEEL CABINETS



G-E Model S-62

INSULITE

PROTECTS WITHOUT LOSS OF INSULATING EFFICIENCY THROUGH ALL THE YEARS TO COME

THE hardy forests of the north have withstood the ravages of time, and the elements, for centuries. Insulite is made from the tough fibers of these enduring woods. To make these fibers still more enduring, they are chemically treated to resist moisture and to guard against rot, mold, and disintegration.

Because it's made in board form and cannot sag or slip, Insulite when installed in a refrigerator cabinet "stays where it's put", and will go on efficiently insulating throughout the entire life of the cabinet.

In addition to its high thermal insulating efficiency, Insulite has many qualities which make it a superior cabinet insulation. It is odorless and will not attract odors. Insulite is structurally strong, but light in weight, which permits reducing wood framing to a minimum. It is furnished cut to size and is easily handled and quickly installed, reducing labor costs, material waste, and speeding up production.

If you are not using Insulite in your cabinets, may we send you additional information and samples. Our Engineering Department will gladly cooperate with your engineers and without charge, analyze your insulation problems.

They can furnish you with data, facts, and figures which will prove to you that Insulite is the most efficient, practical, and economical insulation for you to use. Write today or just fill out and mail the coupon.

Insulite Has High Thermal Insulating Efficiency. Structurally Strong

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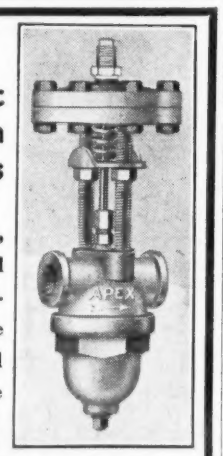
(A Backus-Brooks Industry)
1200 Builders Exchange, Dept. 30D
Minneapolis, Minnesota
OFFICES IN ALL PRINCIPAL CITIES
Please send me your folder on Refrigerator Insulation and also a sample of Insulite.
Name.....
Address.....
City..... State.....

Insulite is Odorless and Will Not Attract Odors. Light in Weight

INSULITE
the Wood-Fiber Insulating Board

APEX Automatic Refrigeration Specialties



Expansion Valves, Pressure Control Water Regulators, Gas Pressure Regulators, and Water Pressure Regulators.

APEX REGULATOR COMPANY
DIVISION OF
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MARSHALLTOWN, IOWA

Wirfs Corporation

DESIGNERS of refrigerator door gasket. An organization with a background of refrigerator manufacturing experience. Essentially gasket manufacturers, we are capable of solving all your gasket problems.

Wirfs PATENTED
AIRTITE" GASKET

is made in five standard sizes. For the manufacturer requiring a special type, we offer the services and experience of an organization devoted exclusively to door gasket manufacturing.

Let us work from your blueprints.

DEALERS in electric refrigeration have many occasions to use "AIRTITE" Gasket. Write for samples and prices.

WIRFS CORPORATION
135 S. 17th St. St. Louis, Mo.

SERVICE HINTS

By FRANK W. GRAY

Service men are often in a position to sell additional equipment while installing a job. In this respect, they sometimes have an advantage over the very salesman who took the original order, since a purchaser will often listen more readily to the technical advice of a service engineer than to the opportunism of a sales talk.

For instance, when installing equipment in a restaurant the service man can often prevail upon the buyer to put in refrigerated display cases in the back bar, additional water-cooling facilities, or perhaps a salad counter.

Service men should be constantly alert to such sales opportunities, and should have some scale of recompense for taking advantage of them. The purchaser is usually in a more receptive frame of mind during the process of installation than when originally contacted.

Some service men still persist in putting in commercial refrigeration jobs with little or no attention to air circulation. Following the line of least resistance, cooling coils are often installed in the ice bunkers of old meat coolers, and in the rear of show cases, without any revision of air baffles in order to take care of the faster circulation of air necessary with electrical refrigeration units.

The ice bunkers of old-fashioned refrigerators were built to hold a bulk of ice, and not with any scientific forethought as to air circulation. A large bulk of ice slowly cools a box by radiation and conduction, as well as by convection, the damp air absorbing and transferring heat more readily than the drier air which prevails with the mechanical equipment.

There is some argument as to the relative efficiencies of vertical and horizontal receivers. There is little difference in the operating functioning of a receiver, whether horizontal or vertical in position, but the vertical type has this advantage: it usually provides a more even flow of liquid refrigerant into the liquid or high pressure side of the system, with a smaller charge of refrigerant in the machine.

Electric refrigeration cooling equipment depends almost entirely upon convection for heat transfer. Consequently, correct air baffling around cooling coils —particularly in large coolers or display counters—will sometimes increase the efficiency of the equipment fifty per cent, with resultant low costs of operation. The cold air duct of old-type refrigerators should almost always be enlarged when mechanical equipment is installed.

Service men are prone to argue about the relative merits of various refrigerants. In such arguments generalities are hopelessly confusing. Refrigerants have various properties, each of which must be considered before any comparison can be made.

Some of these properties which bear a direct relation to the efficiencies of the refrigerants are as follows: boiling point, affinity for oil, poisonous effect upon breathing, weight, price per pound, volatility, explosive qualities, ease of detection of leaks, inflammability, operating pressures, effect of moisture, etc.

If service men would study such properties of their favorite refrigerant, and compare them point by point with others, they would arrive at some understanding of their subject and would be in a better position to refute counter arguments.

No electric refrigeration compressor larger than ⅓ h. p. should be installed without an electrical safety switch. These safety "cut outs" cost very little in proportion to the damage which may be caused by an electric motor burning out from high amperage flow, or a breakdown of the machine from high head pressure. In the case of a water-cooled machine, the water supply might fail, or the water waste line to the sewer might stop up. Meantime, the machine will run "hot" until something burns out or breaks.

Very little heat transfer takes place through the top of a refrigerator. The writer witnessed an interesting demonstration of this fact while testing out a brine cooling unit for a large ice cream fountain. The brine unit was some 12 ft. long, and had sleeves for eight five-gallon ice cream cans.

The unit was placed in a large box filled with sawdust, and was heavily insulated on the sides and on the bottom. The top of the unit, however, was left exposed, only a long strip of brown wrapping paper being used to cover it.

The room was warm, but when a compressor was connected up to the brine tank a temperature of 2 deg. F. below zero was obtained in the ice cream sleeves protected on the top by only a single thickness of paper. This was due, of course, to the fact that the cold air remained in the sleeves, allowing practically no heat transfer from the top.

Another interesting test was made with the same ice cream cooling unit. A lump of chemical was dissolved in one end of the long tank, which left a cloud of residue in the brine. Although the majority of the cooling coils were at one end of the tank, and brine circulation was depended upon for heat absorption, the cloud of chemical hung suspended in the liquid at the end of the tank after several days of operation, demonstrating that the brine did not actually circulate but that the heat transfer took place entirely by the process of conduction in the liquid.

A pleasing finishing touch to a commercial job can be obtained by painting the copper tubing after installation is completed. Copper normally oxidizes to an unsightly green color after several months of exposure. The paint protects the tubing from oxidation, and adds materially to the finished appearance of the installation. Such details characterize a good job.

When dryers are used to remove the moisture from a system, they should be removed not later than 24 hours after being installed. The calcium chloride content of the dryer will have absorbed its full quota of moisture after that length of time, and being saturated will tend to dissolve and be disseminated through the system with the circulating refrigerant, causing stoppage of the valves if left in the line indefinitely.

Occasionally a service engineer is confronted with the problem of fitting cooling coils into the draft arms used for beer dispensing in bars of the old type. The old type beer coil installation provided a small tank in each draft arm to be filled with cracked ice, the beer coils coming up from kegs in the basement being coiled in the bottom of this small tank under the ice.

It is difficult to devise refrigeration cooling equipment to fit into so small a tank, providing refrigeration for peak load requirements and at the same time safeguarding the installation from freezing up during slack hours.

The best method of installation in such cases is to install refrigeration equipment in a large cooler in the basement, cooling this basement refrigerator in which the beer kegs are kept to about 35 deg. F. The pipes leading up from the kegs to the draft arms in the bar should then be insulated, so that the beer may be pumped up to the draft arms pre-cooled.

In this case very little refrigeration will be needed at the draft arm cabinets. The service men will save trouble if they advise the owner to use this type of installation, eliminating the beer coils in the draft arms, and connecting the insulated beer pipes direct to the outlets.

GRADUATES OF INSTITUTE GO INTO REFRIGERATION

Chicago—An analysis of graduates who had taken the home study course in refrigeration offered by the Utilities Engineering Institute of this city showed that a large proportion of them are actively engaged in electric refrigeration work.

Investigation of 100 graduates revealed the following information:

1 is with Chilrite
4 are with Copeland Distributors
5 are with Frigidaire Distributors
2 are with General Electric Distributors
12 are with Kelvinator Distributors
2 are with Majestic Distributors
2 are with Reliance Distributors
3 are with Servel and Electrolux Distributors
19 are with distributors, make not known
6 are with accessory and supply firms
2 are with cold storage firms
4 are with dairies
6 are with ice cream companies
5 are with independent service companies
2 are with installation contractors
2 are with miscellaneous users handling own service
3 are with municipal or United States governments
4 studied only as a hobby
16 are now available to employers

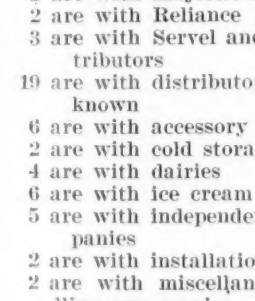
100 Graduates

Of this group, 42 had some previous experience, and the remaining 58 were inexperienced, but most of the 58 had previous mechanical or electrical experience in other lines. Eight of the 100 had a college education, 53 had a high school education, 21 completed grammar school, and 18 did not state their education or did not complete grade schools.

Students of the institute are located in 45 states and 19 foreign countries.

NEW YORK A.S.R.E. MEMBERS PLAN ANNUAL OUTING

New York City—Members of the New York section of the A. S. R. E. will hold its annual outing on June 24 in Mazda Park, according to an announcement by Ira E. McFarland, who is in charge of the arrangements for the day.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For Direct Charging!
Every Container Analyzed
"Pure" Bone Dry . . . Cylinders 2 to 150 lbs.
ANSUL Chemical Co. MARINETTE, WIS
Also . . . . Ton Drums-Tank Cars

The Ideal Water Cooler Tubing

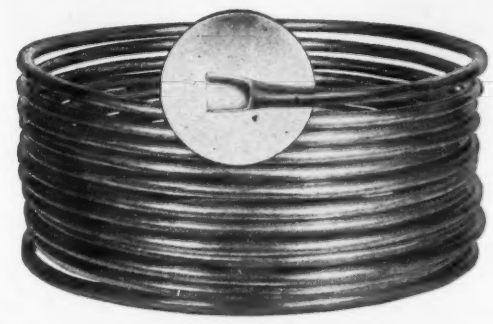
"Wolverine Electro-Tin-Plated"

(Coated with Pure Tin)

DEHYDRATED and SEALED

Delivered in straight lengths up to 20 feet—or coils of greater length—or fabricated exactly to your specifications —dehydrated and sealed as required—electro-plated with pure tin. It is free from scale, moisture and defect—made to A.S.T.M. Specification B-68-30T.

Immediate Service



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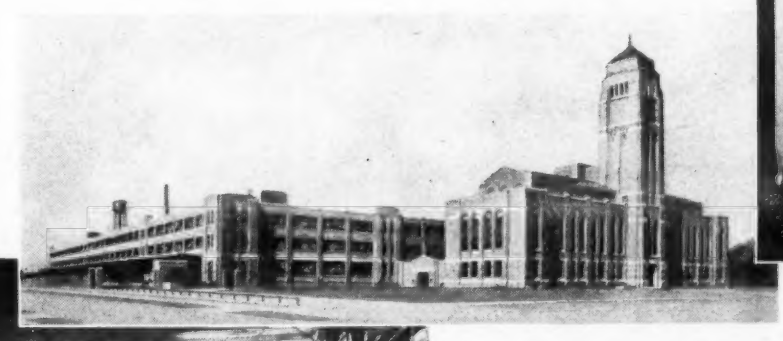
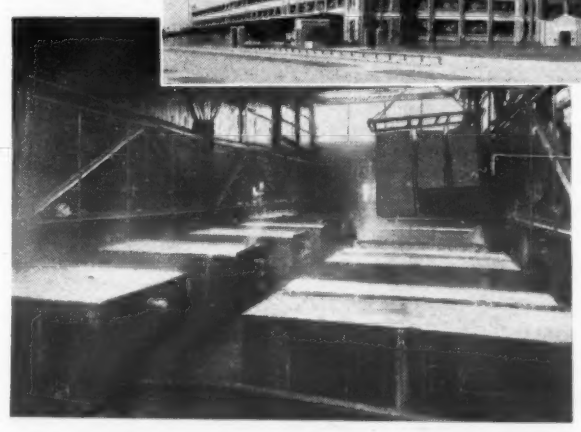
Sales offices in all major cities. Stock available at Los Angeles, 224 E. 11th St. Write or wire for name of nearest representative.

Bonderite Protection Given Kelvinator Cabinets

Oldest electrical refrigeration manufacturer uses Bonderizing for all lacquer enamel finished models





Illustrations show one of the late model Yukon Kelvinators, the huge Kelvinator plant in Detroit, and a view of the Bonderite installation in Kelvinator's Grand Rapids cabinet factory.

"I have thought of a better way."
—LORD KELVIN

CONSTANT seeking and adoption of "the better way" has made Kelvinator a recognized leader in the electrical refrigeration equipment field.

Among the outstanding improvement features incorporated into Kelvinator construction since the company's start in 1914 is the adoption of Bonderizing . . . the chemical process that holds paint to steel.

Today every Kelvinator steel cabinet carrying a lacquer finish is Bonderized. The lacquer is thus anchored right into the metal, protecting it against rust and maintaining the refrigerator's excellent appearance through years and years of service.

A housewife enjoys satisfaction in the knowledge that her Kelvinator's gleaming pure whiteness will not be blemished by unsightly exposure of rust-stained metal. Assurance of such satisfaction is often the deciding factor in her decision to buy.

* * * * *

In the Kelvinator cabinet factory at Grand Rapids, Michigan are numerous Bonderite tanks into which cabinets, carried on overhead conveyors, are dipped. After a ten-minute treatment, and a quick water rinse, the metal surfaces are changed to an insoluble phosphate—chemically clean and slightly absorbent.

This makes an ideal base for lacquer. It clings smoothly upon application and is securely "locked" upon drying.

Manufacturers in many lines of industry are adopting the Bonderite process. From the production standpoint it is the most efficient method known for preparing metal for the application of paint, enamel or lacquer outer coats; and the permanence of beauty and protection from corrosion which it assures has a highly welcome effect on sales.

Bonderizing is adaptable to either mass or small production. Cost of necessary equipment and of operation is very low. Skilled labor is not required.

We are glad to give detailed information regarding application of the process to any manufacturer's specific requirements.

Write today for our booklet—"Bonderite."

Bonderite
HOLDS PAINT TO STEEL

PARKER RUST-PROOF COMPANY
2197 E. Milwaukee Ave. Detroit, Michigan

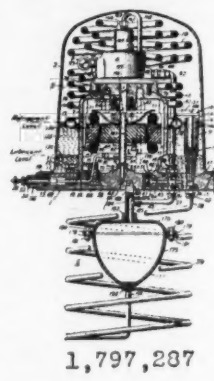
LATEST PATENTS ISSUED IN FIELD

ISSUED MARCH 24

1,797,225. REFRIGERATION SYSTEM. Fred F. Brueckner, Detroit, Mich., assignor to Copeland Products, Inc., Detroit, Mich., a Corporation of Michigan. Filed Apr. 12, 1926. Serial No. 101,273. 1 Claim. (Cl. 62—116.)

The combination of a refrigerator cabinet having an insulated cold storage compartment in its lower portion and one side of its upper portion and a ventilated machinery compartment in the other side of its upper portion, and an air cooled mechanical refrigerating apparatus comprising a heat absorbing unit and a heat dissipating unit operatively interconnected and mounted upon a common support at substantially the same level, said refrigerating apparatus being disposed in said cabinet with said heat absorbing unit in that part of the cold storage compartment which comprises one side of the upper portion of said cabinet and with the air cooled heat dissipating unit in the ventilated machinery compartment which comprises the other side of the upper portion of said cabinet, said common support for said apparatus and said connections between said heat absorbing and heat dissipating units passing through openings in the insulated walls between said machinery compartment and said cold storage compartment provided with means for preventing heat leakage around said support and said connections, whereby said refrigerating apparatus is contained entirely within said cabinet and is so arranged that the heat given off by said heat dissipating apparatus will naturally move away from said cold storage compartment and the circulation of cold air currents within said cold storage compartment will circulate in a natural path around said heat absorbing unit.

1,797,287. REFRIGERATING MACHINE. Andrew A. Kucher, Jersey City, N. J., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed Oct. 22, 1921. Serial No. 509,672. 40 Claims. (Cl. 62—115.)



1,797,287

1. In a refrigerating machine in which a refrigerant fluid is successively vaporized, compressed and condensed in a repeating cycle, the combination with a chamber in which a change of state of the refrigerant fluid is effected, of a compressor and actuating motor therefor enclosed within said chamber disposed in a lower portion of the chamber so that the heat of the motor is dissipated at least in part through the intermediary of the condensed refrigerant.

1,797,385. REFRIGERATING APPARATUS. George E. Weissenburger and George L. Weissenburger, Keokuk, Iowa. Filed Dec. 30, 1929. Serial No. 417,334. 3 Claims. (Cl. 62—115.)

1. In a refrigerating system, the combination with a compressor and an expansion device, of a liquid receiver interposed between said compressor and expansion device and containing a refrigerant and a lubricant of lower specific gravity than the refrigerant, of float controlled discharge means operable at carrying levels for limiting the depth of the lubricant.

1,797,421. REFRIGERATING APPARATUS. Edward N. James, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Jan. 9, 1929. Serial No. 331,288. 1 Claim. (Cl. 220—55.)

In an evaporator for refrigerating apparatus of the type having a container forming a reservoir for volatile liquid refrigerant, an integral drawn sheet metal shell comprising a portion forming a container, a flange projecting perpendicularly outward from the container for receiving a plastic gasket and a lip projecting substantially perpendicularly from the flange for confining the gasket within the flange; a plastic gasket disposed adjacent the flange within the lip, a closure for the container adjacent the gasket, the closure having a shoulder disposed inside of the gasket and flange whereby the gasket is completely enclosed between the closure, flange and lip, a reinforcing ring on the opposite side of the flange from the gasket, and bolts passing through the gasket and flange and engaging said ring to form a sealed joint between the closure and the container.

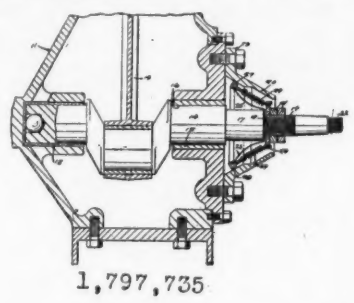
1,797,451. REFRIGERATOR. John C. Staton, Atlanta, Ga., assignor to The Coca-Cola Company Atlanta, Ga., a Corporation of Delaware. Filed July 2, 1929. Serial No. 375,373. 5 Claims. (Cl. 220—9.)

1. A refrigerator comprising, in combination, a frame comprising angle iron legs and upper and lower horizontal members connecting adjacent legs, said upper members formed with inwardly facing angles comprising vertical and horizontal flanges, a heat insulating box resting on said horizontal flanges and its corners embraced by said vertical flanges and by the angles of said legs, a rectangular frame of downwardly open channel material covering the upper edges of said box and a cover supported by said frame.

1,797,493. COMPRESSOR. Charles Baxter, Clapham, London, England. Filed Aug. 11, 1928, Serial No. 299,084 and in Great Britain Aug. 31 1927. 1 Claim. (Cl. 74—14.)

1,797,735. SEAL FOR COMPRESSORS. Charles C. Spreen, Detroit, Mich. Filed Apr. 22, 1927. Serial No. 185,786. 4 Claims. (Cl. 286—11.)

1. In a journal bearing sail, the combination with a casing having an aperture therethrough, a plate closing said casing aperture and provided with a shaft aperture, and a shaft extending through said plate aperture; of a seal



1,797,735

structure comprising a frusto-conical seat member attached to said plate, a resilient frusto-conical diaphragm having one end rotatably sealed against said seat member and the other end sealed against said shaft, means for clamping the one end of said diaphragm to said shaft, and spring means for extending said diaphragm toward the inner side of said seat member.

1,797,761. COMPRESSOR VALVE. Ralph W. Doeg, Detroit, Mich., assignor to Kelvinator Corporation, Detroit, Mich., a Corporation of Michigan. Filed Dec. 16, 1927. Serial No. 240,407. 2 Claims. (Cl. 251—119.)

1. A compressor valve mechanism comprising a member provided with a valve port, a relatively movable member of substantially cup shape adapted to close said port and provided with relatively smaller valve ports in the base thereof, means disposed within said cup-shape member adapted to close said ports, an abutment member movably supported relatively to said cup-shape member and adapted to engage the upper edge of said cup-shape member and provided with a portion extending into proximity to said valve port closing means, a relatively weak spring disposed between said abutment member and said valve port closing means, a relatively strong spring adapted to engage said abutment member and adapted to hold it in resilient engagement with said cup-shape member, and means for holding said relatively strong spring in position.

1,797,764. REFRIGERATION. Frederick R. Erbach, Detroit, Mich., assignor to Kelvinator Corporation, Detroit, Mich., a Corporation of Michigan. Filed Jan. 22, 1927. Serial No. 162,699. 10 Claims. (Cl. 62—95.)

1. In a liquid aerating and cooling apparatus, a structure including end plates having tubular recesses and pipes engaging the recesses to form therewith a continuous passage for the flow of heat absorbing fluid therethrough, a housing surrounding said structure, said housing being adapted to contain a heat absorbing fluid, means for discharging liquid over the exterior surfaces of said housing, means for receiving the liquid flowing from said housing, and means for detachably associating said housing and said receiving means with said pipes.

1,797,803. COMPRESSOR. Charles C. Spreen, Detroit, Mich. Filed Apr. 18, 1927. Serial No. 184,593. 5 Claims. (Cl. 230—45.)

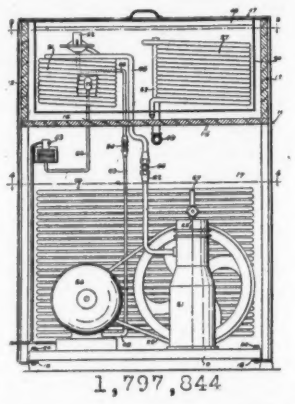
1. In a mechanical refrigerating system, a two stage refrigerant compressing means comprising a unitary casing having a cylinder formed therein, a rotary pump within said casing to initially compress the vaporized refrigerant, a reciprocating piston within said cylinder to finally compress the initially compressed refrigerant delivered thereto from said rotary pump, means for driving said piston, and gear means connecting said piston driving means with said rotary pump to provide for driving said piston, and said rotary pump from a single source of power.

1,797,820. CLUTCH. Herbert L. Brump, Dayton, Ohio, assignor, by mesne assignments, to Delco Products Corporation, Dayton, Ohio a Corporation of Delaware. Filed May 11, 1928. Serial No. 277,051. 7 Claims. (Cl. 192—105.)

1. A clutch comprising a driving member, a driven member, a pair of engageable clutch faces, means fixing one of said faces for rotation with each of the members, a series of balls carried directly by one of the members and guided therein for movement in directions parallel to the axis of rotation of said members, a cam plate rotatably mounted about the axis of rotation of the driving member for moving said balls to press the clutch faces together, and pivotally mounted weight means mounted on the driving member so as to move outwardly under the action of centrifugal force to move the cam plate to clutch engaging position.

1,797,844. MECHANICAL REFRIGERATION. Charles C. Spreen, Detroit, Mich., assignor to Kelvinator Corporation, Detroit, Mich., a Corporation of Michigan. Filed Aug. 6, 1926. Serial No. 127,530. 4 Claims. (Cl. 62—115.)

1. A unitary fluid-cooler comprising: a cabinet provided with a partition dividing the interior of said cabinet into a lower mechanism compartment and an upper refrigerating compartment, a brine tank within said refrigerating compartment, a fluid-cooling device within said brine tank, a cooled-fluid delivery duct connected to said fluid-cooling device, a refrigerant expansion device also within said brine tank and



1,797,844

disposed in a region thereof remote from the fluid cooling device, refrigerant compressing mechanism within said mechanism compartment, and connections operatively connecting said mechanism and said refrigerant expansion device.

1,797,886. ELECTRIC THERMOSTAT. Adolph A. Thomas, New York, N. Y. Filed June 13, 1927, Serial No. 198,358. Renewed Jan. 20, 1931. 14 Claims. (Cl. 200—138.)

1,797,954. REFRIGERANT CONTROL. Harold A. Greenwald, Detroit, Mich., assignor to Thomas G. Whitehead, Detroit, Mich. Filed Apr. 22, 1929. Serial No. 357,151. 2 Claims. (Cl. 62—127.)

1. The combination with the condensing and cooling means of a refrigerating apparatus, of means capable of serving as a filter and of resisting the flow of refrigerant so as to control the supply of refrigerant from the condensing means to the cooling means aforesaid, said means including a vertically arranged porous plug and a sectional casing therefor, the sections of the casing being dished, arranged substantially vertically, opening toward each other, having vertically extending marginal flanges, and having laterally projecting horizontal tubular portions at approximately the centers thereof, the plug being a plate-like disk of ceramic substance constituting a vertical partition for the casing and having the edge portions thereof received between the marginal flanges aforesaid and the tubular portions constituting an inlet and an outlet respectively, for the casing at apposite sides thereof and being in substantially horizontal alignment with the center of the plug whereby reservoirs are provided upon opposite sides of the plug at the bottom of the casing in each section thereof, one of said reservoirs being adapted to receive sediment gravitating from one of the tubular portions aforesaid.

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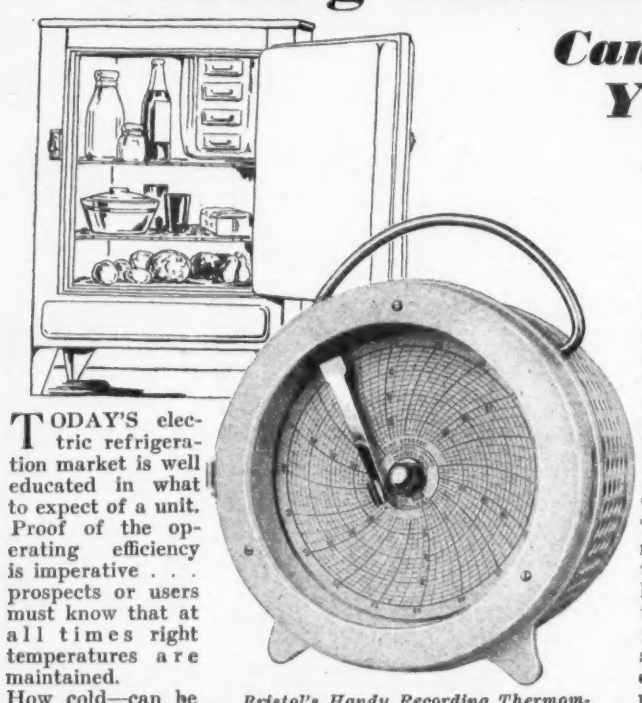

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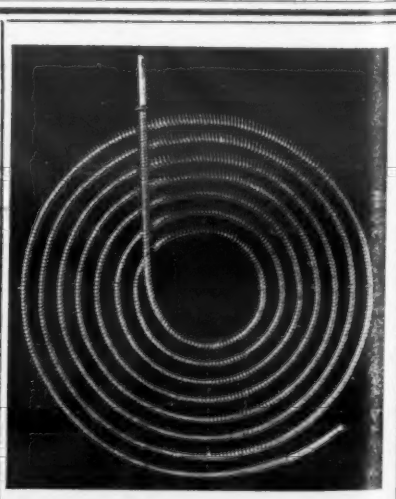

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OF MECHANICAL REFRIGERATION

ISSUED MARCH 31

1,798,148. LATCH. Andrew Ekman, Grand Rapids, Mich., assignor to Grand Rapids Brass Company, Grand Rapids, Mich. Filed April 8, 1929. Serial No. 353,318. 12 Claims. (Cl. 290—332.)

1. In a latch, the combination of a housing having openings in its front and rear walls, a pivot carried by said housing, a bolt arranged through said openings and having an elongated pivot opening engaged by said pivot whereby the bolt is supported for pivotal and longitudinal movement, said bolt having a recess open to said pivot, a coiled spring arranged in said recess to engage said pivot, and a toggle member pivotally mounted on said bolt to engage the front wall of the housing, the housing engaging face of said toggle member having a flat central portion and inclined portions at each end thereof, the side walls of the housing coacting with the ends of the toggle member to limit its lateral movement whereby the bolt is yieldingly held in a central position or at either end of its stroke.

1,798,149. LATCH. Andrew Ekman, Grand Rapids, Mich., assignor to Winters & Crampton Mfg. Co., Grandville, Mich., a Corporation of Michigan. Filed June 18, 1929. Serial No. 371,778. 5 Claims. (Cl. 292—332.)

1. In a latch, a covering housing, a latch lever pivotally mounted within the housing, spring means in the housing associated with said latch lever, and means combined with said spring means for normally causing said spring means to hold the latch lever at a central position and exert its greatest effective force upon the lever when at said central position, the effective force of the spring diminishing when the latch lever is moved away from normal central position and until it reaches its outer position and means to hold it in its outer position.

1,798,170. LATCH. Gordon E. Roedding, Grand Rapids, Mich., assignor to Grand Rapids Brass Company, Grand Rapids, Mich. Filed July 13, 1929. Serial No. 377,989. 7 Claims. (Cl. 292—69.)

1. In a latch, the combination of a housing provided with opposed openings in its front and rear walls, the opening in the rear wall having an inturned pivot supporting flange at its outer edge, a bolt slidably mounted in said openings and provided with a triangular cam opening disposed with its apex rearwardly and having a central notch in its front edge, an actuating lever disposed through the opening in the rear wall of the housing in overlapping relation to said bolt and provided with a pivot engaging said pivot supporting flange and with a stud engaging said cam opening in said bolt, said lever having a centrally disposed transverse slot, and an S-shaped spring having one arm engaged in said notch in said bolt and a loop-like offset in its other arm engaged in said slot in said lever and acting to yieldingly hold said lever in its initial position and to project said bolt.

1,798,181. DOOR FOR REFRIGERATOR CARS. Kenneth J. Tobin and William W. Darrow, Chicago, Ill., assignors to Camel Company, Chicago, Ill., a Corporation of Illinois. Filed Sept. 27, 1928. Serial No. 308,852. 4 Claims. (Cl. 20—21.)

4. In a refrigerator car door, a body portion, a corrugated sheet metal panel secured to said body portion and having its perimeter in sealing relation with the body portion to provide a dead air space between said panel and body portion.

1,798,192. THERMOSTAT. Walter B. Clifford, Framingham, Mass., assignor, by mesne assignments, to Clifford Manufacturing Co., Boston,Mass., a Corporation of Delaware. Filed July 9, 1925. Serial No. 42,427. 3 Claims. (Cl. 297—8.)

1,798,252. REFRIGERATING APPARATUS. Bertram B. Geyer, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Aug. 31, 1928. Serial No. 303,260. 7 Claims. (Cl. 62—116.)

1. A refrigerating apparatus comprising a mechanical refrigerator cabinet having an insulated food compartment provided with an iceless cooling unit and another compartment provided with an opening, and a secondary cabinet inserted in said last named compartment and closing said opening, said secondary cabinet being provided with an insulated ice cube freezing unit having removable ice cube trays, and an opening with an insulated door for the removal of said trays.

1,798,254. DRY-ICE DISPENSER. Samuel Gordon, Far Rockaway, N. Y., assignor to International Dry Refrigeration Corporation, Wilmington, Del., a Corporation of Delaware. Filed May 14, 1929. Serial No. 362,897. 8 Claims. (Cl. 62—121.)

1. In a dispensing apparatus, a supporting frame, a reticulated form comprising a plurality of separable members supported on said frame, shiftable means on said frame for moving said form to its operative position and means for introducing a compressed liquefied refrigerant into said form when so moved.

1,798,262. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, a Corporation of Delaware. Original application filed Feb. 25, 1924, Serial No. 694,928. Divided and this application filed Aug. 31, 1927. Serial No. 216,755. 16 Claims. (Cl. 62—108.5.)

16. The method of obtaining blocks of frozen material which consists in freezing the material in a container, inverting the container, placing in thermal contact with the container a mass of material to be frozen whose temperature is higher than that of the frozen material, and collecting the frozen material melted loose from the container by heat absorbed from the mass of material to be frozen.

1,798,263. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, a Corporation of Delaware. Filed Dec. 30, 1927. Serial No. 243,699. 9 Claims. (Cl. 62—108.5.)

1. An ice tray for a refrigerator comprising a pan having a bead on the top edge at one end, and a flat handle extending from said bead below the top thereof whereby drip on said handle from said refrigerator does not flow into said tray.

1,798,266. COOLING APPARATUS. Ernst Paul Maret, St. Louis, and Walter W. Wissmann, Maplewood, Mo. Filed Aug. 12, 1929. Serial No. 385,434. 3 Claims. (Cl. 98—39.)

1. A cooling system for barber shops and like establishments provided with chairs for persons receiving attention, comprising a main air conduit, means for causing air to pass through said main air conduit, a flexible air conductor leading from said main air conduit and having branch portions leading to opposite sides of a chair, air discharge elements at the discharge ends of the branch portions of said flexible air conductor, and means for adjustably securing said discharge elements to portions of said chair.

1,798,281. REFRIGERATING APPARATUS. Francis E. Stevenson, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, a Corporation of Delaware. Filed Dec. 30, 1927. Serial No. 243,750. 6 Claims. (Cl. 62—89.)

1. A refrigerator cabinet having an insulated wall with insulation retaining shells and provided with an opening, at least one of said shells having an inwardly projecting flange, a split collar with outwardly directed flanges in said opening and means fused to said collar and extending around said first named flange for securing said collar in place.

1,798,282. PORTABLE VENTILATING OUTFIT. Arthur G. Sutcliffe, Chicago, Ill., assignor to Ilg Electric Ventilating Company, Chicago, Ill., a Corporation of Louisiana. Filed Mar. 19, 1928. Serial No. 262,608. 5 Claims. (Cl. 98—94.)

1,798,290. HEATING OR COOLING DEVICE. Grant Winner and Francis G. Winner, Palo Alto, Calif. Filed Feb. 28, 1928. Serial No. 257,769. 1 Claim. (Cl. 219—39.)

A portable air heater comprising a casing having air inlet openings at its top and air outlet openings at its bottom, a cover for the casing, a tubular member disposed within the casing and being spaced away from the casing wall, heating means disposed within the tubular member, a fan disposed above the heating means for forcing air thereby, and a cone disposed at the bottom of the casing for directing air radially from the tubular member to the outlet openings, the air disposed between the casing wall and tubular member acting as a heat insulator for keeping the casing wall unheated at all times.

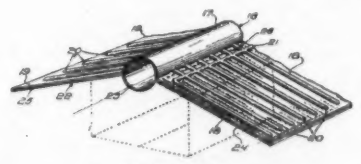
1,798,373. COOLING UNIT. William E. Doughty, Detroit, Mich., assignor to James Vernor Company, Detroit, Mich., a Corporation of Michigan. Filed June 16, 1930. Serial No. 461,591. 15 Claims. (Cl. 257—62.)

1. In a cooling apparatus, a tank for a cooling medium, a conduit within the tank for receiving the fluid to be cooled, means for discharging an agitating fluid into the tank, and means for deflecting the agitating fluid to cause the same to agitate the cooling medium adjacent the said conduit.

1,798,532. WIRE BASKET BUNKER FOR REFRIGERATOR CARS. William B. Hall, Chicago, Ill., assignor to Union Railway Equipment Company, Chicago, Ill., a Corporation of Illinois. Filed Sept. 24, 1928. Serial No. 307,915. 7 Claims. (Cl. 62—19.)

1,798,652. COOLING UNIT FOR REFRIGERATING SYSTEMS. Morris F. Booth, Chicago, Ill. Filed Feb. 13, 1930. Serial No. 428,021. 18 Claims. (Cl. 62—126.)

12. The process of making a sheet metal evaporator, which consists in forming a substantially circular header portion with laterally extending side walls and laterally extending corrugations in one wall, said corrugations opening at one end into the header portion and terminating near the opposite end of the side wall, superimposing the



1,798,652

side walls together so that arcuate portions of the header register, welding the side walls together on lines between the corrugations while said side walls extend laterally from the header in substantially the same plane, and then bending the walls thus secured together into the form of an evaporator, the side walls being sealed by welding together the edges thereof.

1,798,684. REFRIGERATOR. Andrew A. Kucher, Chester, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed Oct. 13, 1925. Serial No. 62,276. 14 Claims. (Cl. 62—116.)

2. In a refrigerating apparatus, the combination of an evaporator, a compressor, a motor for driving the compressor, a fluid tight casing enclosing both the motor and the compressor, a division wall provided in the casing between the compressor and the motor and forming a single compartment for housing the compressor and for retaining a body of lubricant for the compressor and another compartment for housing the motor, and a condensing element separate from and disposed around the casing.

1,798,696. REFRIGERATING APPARATUS. Carl F. Nystrom, Mansfield, Ohio, assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed May 13, 1929. Serial No. 362,757. 4 Claims. (Cl. 62—95.)

1. A cooling unit for refrigerating apparatus comprising a coiled tube for containing a brine solution, a tube disposed within the brine-containing tube for conducting refrigerant, the loops of the outer coil being in intimate contact with each other whereby to provide a freezing chamber for receiving an ice tray, and metallic bonding means joining said coils to provide a rigid structure.

1,798,719. MOTOR MOUNTING. Herbert L. Brump, Dayton, Ohio, assignor, by mesne assignments, to Delco Products Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Sept. 30, 1927. Serial No. 223,123. 7 Claims. (Cl. 248—16.)

1,798,795. CONDENSER. George Hilger, Chicago, Ill. Filed Nov. 18, 1929. Serial No. 407,828. 22 Claims. (Cl. 257—35.)

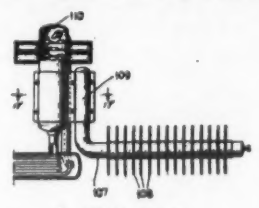
1,798,824. CONDENSER. George Hall White, Washington, D. C. Filed June 12, 1929. Serial No. 370,314. 5 Claims. (Cl. 257—57.)

1,798,854. THERMOSTAT. Leonard Satchwell, Slough, England. Filed Nov. 21, 1927, Serial No. 234,651, and in Great Britain Nov. 25, 1926. 11 Claims. (Cl. 200—138.)

1,798,946. ABSORPTION REFRIGERATING SYSTEM. Guido Maiuri and Raoul Felice Bossini, London, England, assignors to Platen-Munters Refrigerating System Aktiebolag, Stockholm, Sweden, a Corporation of Sweden. Filed Nov. 20, 1930, Serial No. 496,895, and in Great Britain Apr. 18, 1929. 4 Claims. (Cl. 62—119.5.)

1. In a refrigerating system of the absorption type the method of circulating liquid between the absorber and the generator which comprises separating weak absorption liquid from the generator, heating the weak absorption liquid thus separated in successive steps to expel vapor therefrom to successively raise the level thereof, conducting the vapor thus expelled to the vapor space in the generator, conducting the weak absorption liquid to the absorber by gravity, and returning enriched absorption liquid from the absorber to the generator by gravity.

1,798,951. REFRIGERATION. Carl Georg Munters, Stockholm, Sweden, assignor to Platen-Munters Refrigerating



1,798,951

System, Aktiebolag, Stockholm, Sweden, a Corporation of Sweden. Filed Sept. 15, 1930, Serial No. 481,847, and in Germany June 19, 1929. 6 Claims. (Cl. 62—95.)

1. An evaporator, a closed conduit removably connected to said evaporator, an element in heat exchange relation with said conduit and a volatile liquid partially filling said conduit.

1,799,081. CONDENSER. Gustav Marten Justinus Blomqvist, Stockholm, Sweden, assignor to Platen-Munters Refrigerating System, Aktiebolag, Stockholm, Sweden, a Corporation of Sweden. Filed Sept. 20, 1930, Serial No. 483,166, and in Germany June 13, 1929. 6 Claims. (Cl. 257—28.)

1. A condenser comprising a pair of pipe coils of such diameters that when they are fitted together they resiliently engage.

1,799,127. VACUUM COOLER. Peter Schlumbohm, Berlin, Germany. Filed Oct. 22, 1928, Serial No. 314,202, and in Germany Oct. 26, 1927. 5 Claims. (Cl. 62—152.)

1. An evaporator for refrigerating machines comprising in combination a heat-insulating container for the cooling means open at the top, a packing sheet with opening resting on the rim of said cooling-means container, a metal lid on said cooling-means container also open at the top serving simultaneously as vessel for the reception of the goods to be congealed, said lid dipping into the cooling-means, cooling ribs on the exterior surface of that part of said lid which dips into the cooling means, a pipe conduit merging into the cooling-means container and leading to a pump, a further pipe conduit also merging into the cooling-means container, a manometer in connection with said latter pipe conduit regulating the entrance of air into the cooling-means container, a cock in said latter pipe conduit, a system of double pipes in said latter pipe conduit for the admission of air into the cooling-means container for preliminarily cooling said air, a cover of heat-insulating material over the open upper surface of the lid containing the material to be frozen, whereby the cooling-means container stands under partial vacuum so that the atmospheric outer air presses said lid and cover air-tightly onto the packing sheet.

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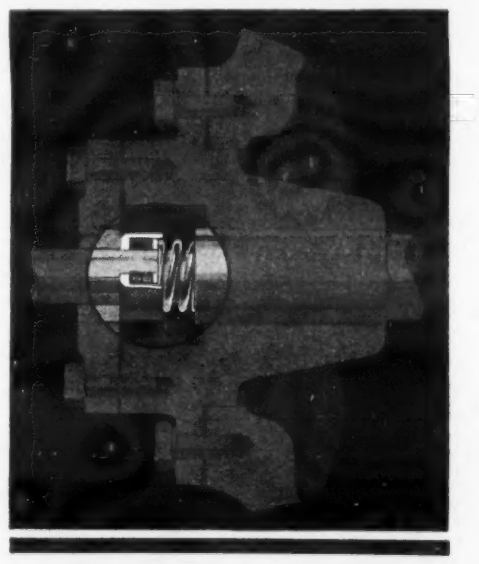

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